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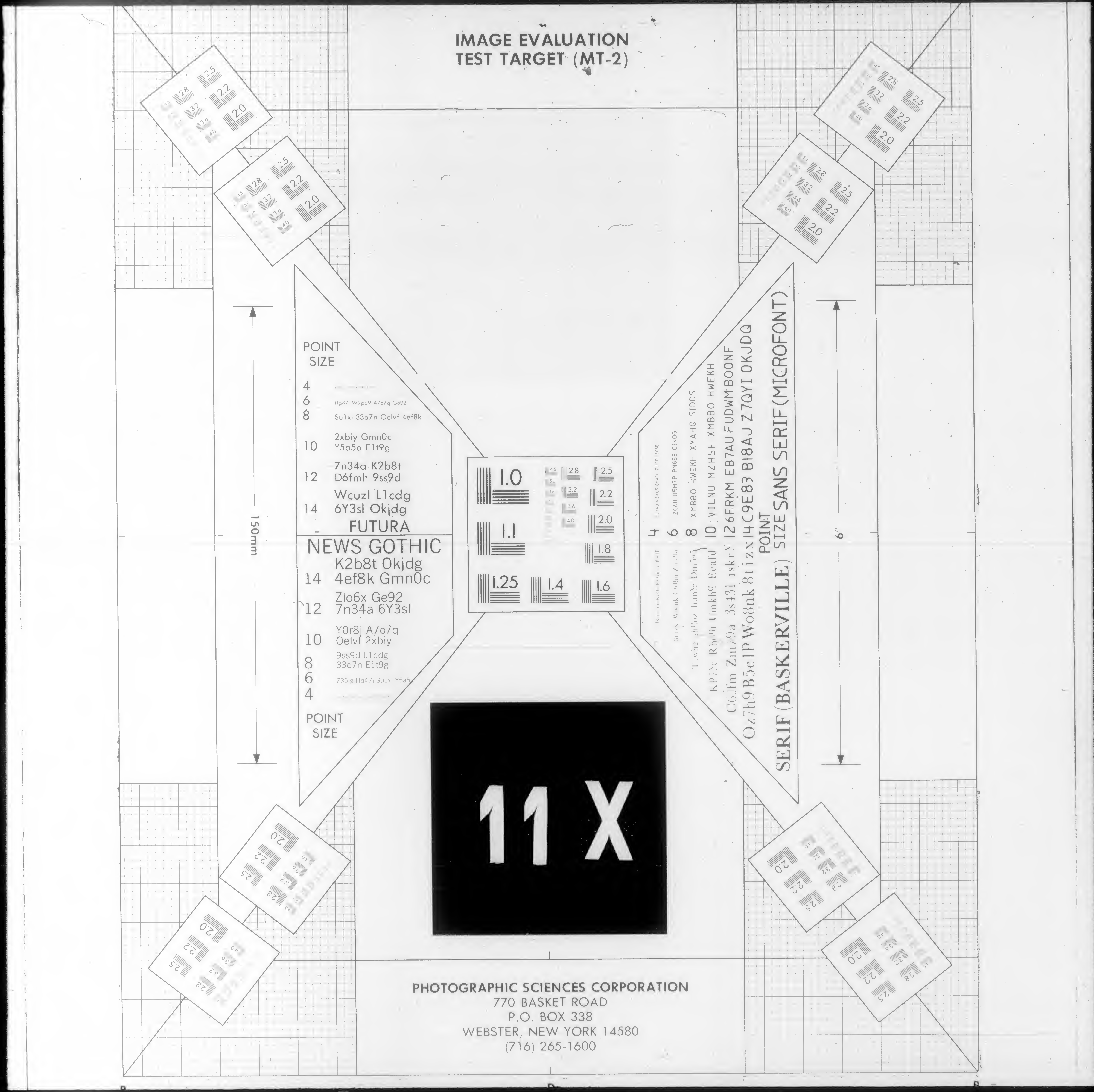

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Architect and Engineer

Of California

Vol. VII. JANUARY, 1907. No. 3.

World's Largest Reinforced Concrete Office Building

THE most notable reinforced concrete building which has yet been announced for San Francisco is being erected on the corner of Fourth and Market streets, the site of the old Flood building. It will be nine stories high and will cost $1,000,000. Its exterior, for the first two stories, will be veneered with ceramic tile in rich browns. Above the second story, the entire front will be faced with dull glazed tile in a soft gray green with trimmings in cream colored glazed terra cotta in rich detail. The corridors and lobbies will be finished in imported marbles and six electric high speed elevators will be installed. All the offices and stores will be trimmed in mahogany. A splendid law library will be installed in the building for the use of the attorneys who may be tenants. The building will have a complete heating, lighting, and power plant sufficient to provide for the needs of all the neighboring buildings.

One remarkable feature of this concrete structure, as pointed out by the architect, Charles F. Whittlesey, is the fact that nine stories are made possible within the limit of height to which concrete buildings are restricted by the city ordinance—one hundred and two feet. The first story will have a height of twenty feet; the second, twelve feet; and the other stories ten feet each. An ingenious arrangement of the structure and the fact that the roof is of concrete, makes it possible to dispense entirely with an attic story.

The contract for the erection of this building has been let to the American Pacific Construction Company, which organization has built some of the largest and most substantial reinforced concrete structures in the United States.

Earthquakes and Earth Faults

By WILLIAM HAM. HALL, C. E.

*In the following Second Article of this Architect and Engineer series, Mr. William Ham. Hall reviews the subject of Earthquakes, with reference to their causes and their motions, as introduction to a description of their effects, which he undertakes in an article to follow. These together, will form the basis of a discussion of the merits and demerits of the several kinds of buildings to withstand earthquake influence.**

WITHOUT following the subject back to primary influences, such as solar and terrestrial heat, the force of gravity and influences which disturb the force of gravity, it appears from the later developed seismologic ideas, that nearly all earthquakes of note are due to one or the other of two proximate causes: first, contractions of the earth's crust, and, second, momentary expansions of parts of it.

The latter, produced by any and all happenings within the earth, of an explosive character or expanding tendency, and which cause outward jars to the outer part or "crust," so-called, are known as explosive or volcanic earthquakes.

The former, mainly consequent upon shrinkages or contracting tendencies in the outer part of the earth, occasioning slips, crushings or foldings of its masses, are chiefly due to extraneous influences or to changes of conditons in such outer part or crust itself, and may be called shrinkage or fault earthquakes.

Earthquakes which are outward jars propagated into shakes, from subterranean volcanic doings, follow immediately upon momentary occurrence of their cause. Those due to contraction of the earth's crust come as the result of a gradually accumulating cause. A volcanic action slight in itself, may initiate a violent earthquake due to the other cause, but the function of the volcanic jar in such case would only have been to advance the time of the movement which was the severe earthquake producer.

Correlatively, it has been argued that volcanic action, producing or leading up to volcanic earthquakes, may be induced in one earth-quarter by great shrinkages and consequent fault earthquakes in some other quarter of the earth.

Thus, there may be, in some cases, an interdependence, immediate or remote, between earthquakes of the two classes and their causes. But it seems that each kind more often happens wholly independent of the other, and that there are vast regions of the earth where shrinkage earthquakes occur but where volcanic influence is unknown.

In the regions of active volcanoes severe earthquakes not infrequently precede great volcanic eruptions, and great eruptions are believed to so expend the subterranean forces as to much lessen for a long period the probability of severe earthquakes.

As the violent shrinkage earthquakes are due to great accumulations of stress, the regular and frequent occurrence of slight earthquakes of the kind, in a locality, might be taken as indication that the stress is not accumulating for a great one; and, correlatively, we might argue that the frequent occurrence of slight volcanic actions, just sufficient to bring on earthquakes of the other kind, wherever these had to be, would constitute a safety valve action against production of conditions necessary to occurrence of the destructive shrinkage earthquake.

While to some extent, no doubt, the frequent recurrence of slight earthquakes of this class, through a long period of time, does tend to postpone the greater earthquake; as matter of fact, great shrinkage earthquakes are sometimes preceded by marked increase in number of small ones and are always followed by an unusual number of slight ones gradually growing more feeble and occurring at greater intervals of time. Understanding the cause of these earthquakes, we can readily appreciate these facts.

The Pacific Coast of North America earthquakes seem to be only of the shrinkage kind, and as I am reviewing the subject merely to establish some basis for studying earthquake effect as here presented, I shall in this writing consider these alone.

Our globe is held together by the attraction which all its matter has for each part of it. This attraction of gravity not only acts as the centripetal force which holds us and other loose objects to it, but also holds the crust of the mass itself together by drawing each part towards the center of gravity of the whole. Tending to counterbalance this and cause the earth to disintegrate, is the centrifugal force, or tendency of each part to fly off at a tangent, caused by the globe's revolution at immense speed, around its axis; and its motion, also at immense speed, in an orbit around the sun has another tendency to disrupt it.

The cooling of the mass, as it does cool slightly through the years, tends to produce contraction of the so-called formations which, geologically speaking, make up the earth's crust. But this tendency to occupy less space because of lessening temperature, would not hold the earth together, neither would our globe remain as one body because of the cohesive strength of its matter, merely, as opposed to the disrupting influence above referred to, were it not for terrestrial gravity, which is the controlling force and holds the mass closely against the strength to resist crushing, which the formations have.

In the process of coming to its present condition the earth has had many cracks or ruptures made in it. When the masses flanking such a rupture have moved so that the originally abutting parts have been displaced with reference to each other, it is called a fault. Of faults in the earth's substance there are very many, local, at least, and usually not far-reaching. Our mining and other excavations disclose these, innumerable and pronounced. But some faults are known to be far-reaching and to be measured by tens and even hundreds of miles in length. Faultings such as these latter have been traced by surface indications in various parts of the earth. Most of them appear to be permanently sealed, for no motion has been detected in them within historic time and surface appearances indicate that no disturbance had taken place in them for long before.

The tendency to contract as due to the earth's cooling, and greater cooling near the surface than within, and greater in some parts of this outer crust than in others, tends to set up strains as between the masses composing such different regions. The action of terrestrial gravity holds all in place without movement, until the strains accumulate somewhere to an extent such that something has to give way.

It is not necessary here to allude to other possible causes for such strains or to other probable reasons for their resulting in earthquake-making slips. The fact is that the strains evidently accumulate until something has to give

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*I fear that the above note of the managing editor, may be taken as promising too much for my copy. I have not undertaken to review the causes and motions of earthquakes for the scientific reader, but in a practical way, though, on what I understand to be accepted ground among scientific people, and only in sufficient detail to serve my purpose presently stated. I do not, in articles to follow, undertake to describe fully earthquake effects, but only to marshal some of them so that my review may serve as a practicable starter for a talk about various kinds of buildings and classes of construction as regards earthquake resistance. And when it comes to this talk, I am not even making it technical, much less attempting to make it scientific, as these terms usually are understood. If I succeed in presenting this subject popularly and clearly, so as to convey a safe and sound common-sense understanding of building problems in an earthquake country, my object will have been accomplished.—Wm. Ham. Hall.

way. These givings of way usually occur along the planes of the greater faults, which, indeed, have probably been made and certainly seem to be maintained to admit of such adjustments, or new faultings possibly are even yet sometimes brought about in the process of relieving such strains.

While the location of most of these yet active faults, covered in as they are, for the most part, by deep beds of loose materials, or extending wholly under the ocean, can be surmised only, or determined but approximately, some of them are plainly traceable for long distances. Those known to be yet alive from their occasional slips, seem to be among the most far-reaching. Such a great fault lies close and nearly parallel to the Coast of the Central part of California. The surface indications of it are very plain and many, for the larger part of several hundred miles, throughout which it had been located and studied before the violent slipping of April, 1906, and on a less plainly marked route or routes it is known to continue for a much greater distance. Thus, faults such as this are believed in cases to divide into several, as well as to have subsidiary faultings near to and approximately parallel with them.

The evidence bearing on this general subject which has been furnished by the California happening of April 18, 1906, is most abundant, and surpasses in its plain character all other fresh evidence theretofore available for study since the subject has been taken up by scientists.

(A description of the California earthquake of April, 1906, and of its general effects in and near to San Francisco, is here reserved for a future publication.)

Earthquake Influences and Their Resistance

In a former article I spoke of stress upon structures from earthquakes running under them, in contradistinction to strains produced in bridges and viaducts by loads running over them. That earthquakes actually do run under structures is a suggestive fact. The initial disturbance occurs in one quarter or along one belt, and produces a progressive motion or motions away from that location. The direction of apparent shake may not be forth and back with respect to it, but the progression of the shakings is away from it. Thus, though at the location of the primary disturbance the earthquake simply occurs under structures, away from that location it passes or runs under them.

Though the rapidity of this progress of an earthquake is very great and the difference of time in its arrival at the nearest and at the farthest part of any building's foundation must be exceedingly small, the fact that earthquakes have such progressing character is not without practical bearing.

What is the earthquake motion and what its tendency to destroy? The testimony of individual observers, the evidence of apparent fact, and of instrumental records seem, for the most part, to indicate, three motions—one, horizontal, back and forth, another, horizontal and circular, and a third, wave-like, producing the phenomena of tilting, or rising and falling and of bumping.

We may consider these as the movements to be reckoned with in reasoning on earthquake effects and the guarding against them, even though, following the subject back to the initiation of earthquake phenomena, we clearly see that the forth and back shaking and apparent revolving and wave-like motions may all be merely consequent upon an original grating or bumping slip, in one direction only, of one vast portion of the earth's crust, along side of, or over, or otherwise with respect to another vast portion, or upon a jar occasioned by an explosion under some locality of the earth's surface. Thus do we conceive of what may be called earthquake movements and primary and secondary earthquaking motions. The jumbled-up jostlings which are imparted to us and our structures probably are, for the most part, the latter.

From whatever cause originating, a primary earthquaking motion, com-

mencing, we will assume, in one very limited locality, is probably propagated in radial lines in all directions, therefrom, through the solid deep-lying bedrock, at great speed rates and as simple forth and back elastic vibrations.

These disturbances, communicated to the less homogeneous, less solid and less truly elastic overlying and surface formations, start up resilient or quaking motions in these masses which progress through them at less rates of speed but with greater lengths of shaking movement.

Furthermore, according to the configuration of the planes of contact between the underlying solid bedrock and the overlying and surface masses, separate quaking motions are started at different points in these latter, which proceed through them also in radial lines away from these points of local origin.

Thus, any one vast body of surface material lying, for instance, between several upraised bedrock hills or ridges, and perhaps with other uprising parts of bedrock extending into but submerged within it, may have communicated to it, from the one set of quiverings in the elastic bedrock, a number of quaking impulses at widely separated points and in quick succession. These, being propagated through it in directions away from the points of local origin, meet and produce the jumble of motions which we and our structures are subjected to.

Returning now to the origin of the earthquake: if, instead of the primary disturbance occurring as was above premised, in one very limited locality, it should consist of a slip of one vast region of country, with respect to another vast region, along a plane of geologic faulting, as was the case in the great California earthquake of April, 1906, then there probably would be a number of limited localities along the line of rift, whence exceptionally sharp shaking impulses would be sent out through the deep-lying bedrock. These, proceeding away in radial lines from their several places of origin, would meet or cross each other at localities out from the rift. Here we have not only another probable cause for the confusing of motions, but for the following of shakes of different kinds in close succession, yet constituting the one earthquake, as well as for the apparently rotary motions and for the conflicts met as to the direction of shake in nearby neighborhoods.

Thus, as a rule, violent earthquakes, as these are generally felt, have no one well-defined motion which is lasting. They start in with some certain movement, but this is quickly complicated by others and generally is obliterated or replaced as the controlling movement by some other motion which in turn becomes jumbled up before the earthquake is over. So that at best each of us may only determine the direction of major shake as we experience it, and this may be governed by local circumstance of ground formation and even by the form and construction of the building in which we happen to be.

This rule, however, seems to be applicable only within the region of pronounced violence; for, as severe earthquakes are felt at remoter places, they frequently do present quite well defined and sustained motions.

Almost all of the visible part of the land on this earth is composed of the debris of rock, in various stages of being, from huge boulders to fine sand, earth and particles of mud, or of rock not in itself hard and firm, or of beds of rock distorted and shattered and thus not positively solid and truly elastic. At one extreme of the scale, the underlying bed-rock is solid, firm and hard, and with a true elasticity, while at the other extreme, the debris masses are unstable, soft and with a resilient elasticity or none at all. The jelly in a housekeeper's bowl takes on very much and lasting motion from a sudden push, jolt or jar of the vessel, while the bowl itself moves but imperceptibly and quickly attains rest. The bowl, we may assume, represents the solid rock part of the earth, the jelly, that which is least solid—the deep mud of bay-shore waterfronts, like that of San Francisco, for instance. If we stick a match up in the contents of the bowl, we will find that it will show more motion in response to a like disturbance, than the jelly which supports it. A heavier article, like a nail stuck up a short distance from the match, will show less or more motion than the match, according as the jelly be weak or stiff, and the impulse imparted by the bowl be light and quickly over or hard and lasting. The match and the nail of our miniature quake in a way represent buildings on shaky ground during a real temblor.

These thoughts may serve to prepare us the better to reflect upon the practical significance of the fact that it is the earth which moves, while the structure, by its inertia, remains at rest until motion is imparted to it by its contact with the earth. The structure is shaken by its heels, as it were, and motion is conveyed to its mass only through the medium of its own rigidity.

Several Great Shrinkage Earthquakes

The great shrinkage earthquakes whose effects have been studied within the few years since the character of such happenings came to be understood have shown apparent slips or throws of five to thirty-five feet. That is to say, the vast regions on one side or the other of each of these faults moved as above stated, or the resultant of the motions on the two sides was as stated.

In 1897 a great earthquake in India disclosed several faultings, with an apparent throw down on one side of one of them, of five to thirty-five feet. But there was no relative lateral movement between the two sides. The scarp or little bluff, left exposed for miles in length by the action, was very pronounced, and where the material was solid rock, so that its face could be seen, the fault-plane appeared to be practically vertical.

The very notable Japanese earthquake of 1891 exposed the location of an old fault or made a new one for over forty miles. The differential vertical throw was, for considerable distances, as much as twenty feet; and the apparent horizontal throw was in several localities as much as five feet. A well exposed scarp in this case also showed a vertical faulting.

The Inyo earthquake of 1872 opened a fault for many miles; for about ten of which the fissure was clearly to be seen; and here the up or down throw was four to twelve feet and the horizontal throw ten or more feet; and still again the fault plane was practically vertical.

The late California earthquake of April, 1906, disclosed a fault rift of nearly two hundred miles in length; with a horizontal throw of five feet to twenty feet and an up or down throw of about four feet and less; and this faulting plane was practically vertical.

Seismologists tell us that these vast movements probably occupy much less time than the periods of the resulting earthquaking motions which are felt and observed. The quick and violent throw of such vast bodies and the sudden stopping of them must produce vibrations, back and forth, in the directions of such main movement. The region so moved in a great slip, such as either one of those above mentioned, is doubtless at least several miles in width on one or both sides of the rift. Here, then, would be produced a set of bed rock oscillations running in a belt parallel with and on each side of the fault; and these would naturally be most intense where the slip motion had been greatest, near to the fault, and would diminish, with the amount of that main movement, each way from the rift. Another set of vibrations is caused by the friction or grating and bumping of the two sides of the rift together. These are the vibrations which progress in all directions from the particular places where produced and which are short elastic motions back and forth in the lines of their progression.

It has been estimated, or approximated to, that the probable depth of centers, or foci, of such great earthquakes as those of Japan and India above referred to, is from five to ten miles below the earth's surface. The total depths of fault rifts are doubtless much greater. From these depths also, and probably from the centers of disturbance, more especially, the primary earthquaking vibrations start in all directions, and these reach the surface materials everywhere within the region of disturbance, in diagonal upward lines.

* * *

Want More Class A Buildings

THE removal of the prohibition which limits the height of class A buildings to one and one-half times the width of the street upon which they face is advocated by the San Francisco Real Estate Board in an appeal to the Supervisors. Class A structures, by the ordinance adopted July 2d, are permitted everywhere in the city, but the prohibition which limits their height would prevent the present erection of almost every class A building which came structurally intact through the earthquake and fire.

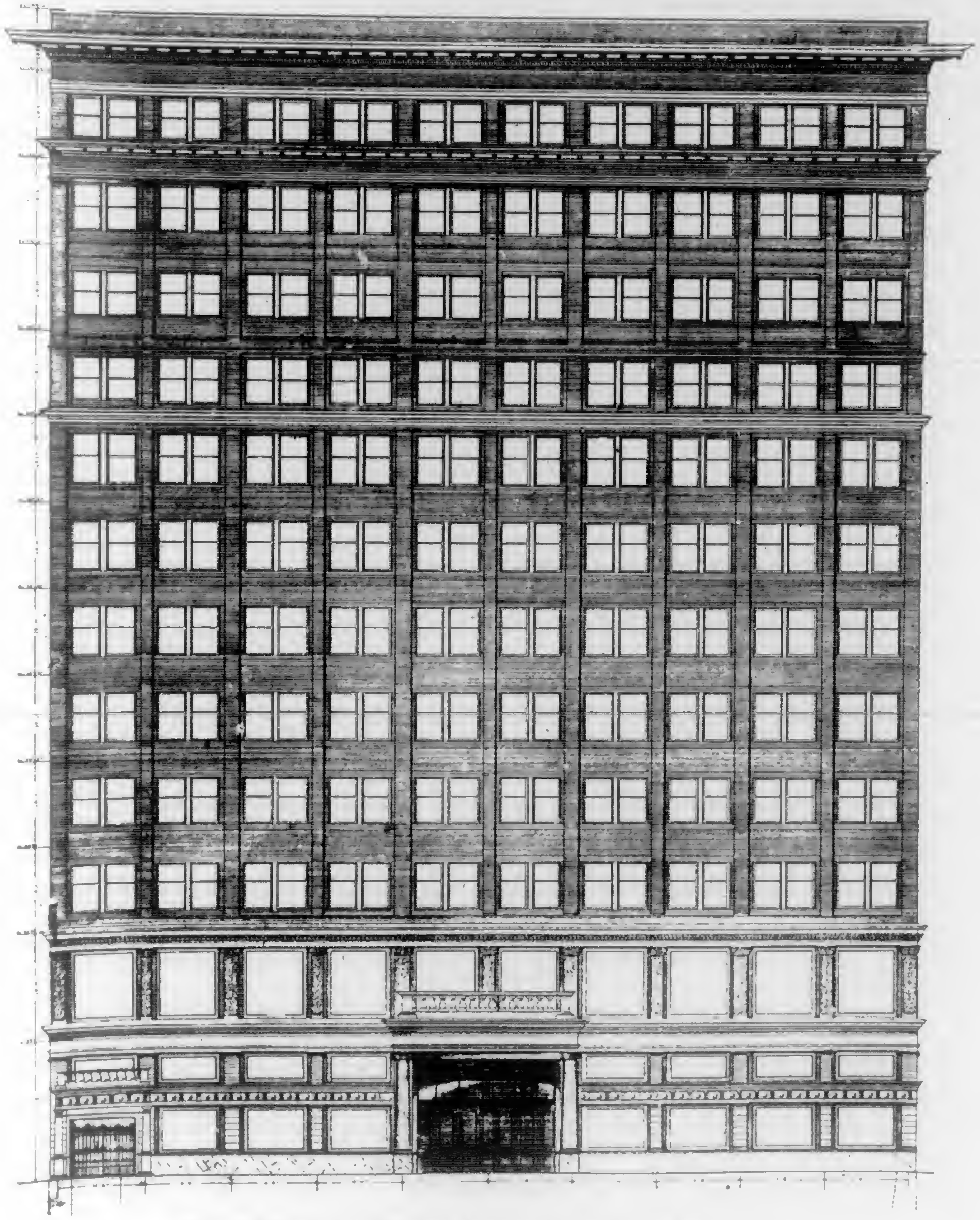
A summary of good reasons against the present restriction as to height is given by Secretary Cadwalader, of the Real Estate Board.

The fact that the tall class A buildings not only universally escaped serious damage from the April disaster, but also in large part withstood the ravages of the fire, is called to mind. San Francisco, it is argued, cannot lag behind the great cities of the East in the construction of first-class office buildings. Modern business conditions demand the concentration of conveniences and time and labor-saving devices, which is nowhere met except in the twentieth century skyscraper. The fact is noted that the city's Class A office buildings before the fire were full to overflowing and that the demand for office space since the fire has far exceeded the supply.

While the permission to erect lofty buildings would enhance the ground values of such holdings and thus benefit the down-town owners of real estate, buildings of as costly material and workmanship as are those of class A character cannot be built and return a paying interest on the investment unless a sufficient number of stories enter into the building. The present restriction, therefore, Secretary Cadwalader points out, not only tends to depress the value of ground holdings, but also discourages the erection of really first-class buildings, and thus draws away investment which would go to enrich the whole community.

Class A buildings cannot be low. The requirement of a steel frame supporting all floor and wall loads, and the requirement that these shall be of incombustible materials, makes construction too costly. The massive and deep-seated concrete foundations universal in class A buildings find no justification unless a sufficient number of stories be piled upon them.

The communication calls attention to a false statement in an Eastern architectural journal to the effect that San Francisco, "from fear of earthquake, is being rebuilt by low (in most cases, one and two story) wooded structures." It closes with the plea that the building law be so amended as to favor the erection of class A, and not class B, buildings. "We all want a class A, and not a class B city."



Proposed Front of the Whitney Building, Geary Street, San Francisco
Robert Morgeneier, Architect

The Recrudescence

By ROBERT MORGENEIER, Architect and Engineer

FOLLOWING the great conflagration, rearing skywards for three days and nights, San Francisco had become even but as a name.

Ashes, heaps of brick and cyclopian walls rearing their gristly heads high in air, marked the mighty area over which desolation reigned supreme.

The great mass of humanity formerly teeming its thoroughfares scattered to the four winds! This same multitude, or rather its leaders, gathered from the corners of the earth and from every walk of life, had, by labor, endurance and devotion to a single purpose, builded a mighty city. Each individual aiming, however, first for his self-aggrandizement, yet, because of necessity, subjected to the common weal.

This self-aggrandizement is the life essence, the quickening of all communial development and progress, subjection to the common interest frets it, modifies it, but never subjugates it.

Individual policy, like water running down hill, extends itself into every niche and corner, maintains itself in every move and effort of the body politic and sums up its energy in the "final say" in everything spiritual, social or commercial.

What, then, even when the vapor columns still were mounting upward from our vale of desolation, gave first token of reincarnation? *The spirit of individual aid and effort!*

Out of the vast combustion and havoc without parallel strode the individual will, fixed in its determination to rear again its individual part of those things swept away.

Out of that which had become almost a bare sound, a name, "San Francisco", should through his energy occur a recrudescence of the ancient splendid spirit of "49", which had been seized by the flames.

Yes, it was splendid, that spirit and the city of its creation, which, alas, was doomed to heave and groan in its gigantic death struggle before our very eyes. Splendid because, above all, it represented the power, determination and will of men to clad and girdle its many hills with magnificence, make the land and the sea yield tribute, defy the storm, hew out of life's tenacious rock, each for himself, a cover and shelter. And all this within a generation.

But, to bring back the true spirit and replace our social, industrial and commercial magnitude, calls for more than a general deliberation. The individual must and will say, "I give not this city for lost! From this great fall, my work arising, shall appear more grand and glorious than if I had lived on in the even tenor of my ways, and I will now do and strive so that no second fate shall find me or my progeny unprepared."

Preceding all things constructive, however, comes the re-establishment of the individual status. For, we well know, the fire destroyed and the earthquake shattered not only our buildings, but our income, positions, commercial, family and social ties, our "good-will", acquaintanceship, daily rounds, habits, hopes and many ambitions. Herein is summed up the full measure of the calamity.

A regeneration of the entire social structure is going on, must go on, and happy he who drops not entirely out of sight. This regeneration takes time, hence we must be patient.

Wealth, its possession or supposed possession, is the background of our social and commercial fabric, say to the contrary what we may.

As the woof and web of that fabric is again repaired or replaced "things will move on."

To the praise of a vast number it may be said, they have taken time by the forelock and that which perished is being replaced.

But think not of a "City Beautiful", which at best, is but a figment of the mind, or at its worst, a sordid scheme of advertisement. We will never have a new City "cut and dried," nor stenciled out to order by any architect, howsoever competent or able he may be.

CITIES ARE NOT BUILT IN THAT WAY. Being built in the natural way, they will also *not* submit to revolutionary changes. If any one had a chance to try this, it was Louis Napoleon in Paris. Yet, despite power, unlimited means and Baron Hauseman, as his Major-Domo, the old "Cite" is today as it always was, and excepting the boulevards cut through the most bedraggled parts of the city at large, no great changes were made.

There is no despot to dictate to San Franciscans what and how they are to rebuild, nor can you take away their land for the sake of supposititious "beauty."

But why refer to this at all? Hand in hand with the readjustment of proprietorship goes the rebuilding of the new City. Within a fraction of the time required to build the first, a second San Francisco will be accomplished, and with it the incrudescence of its old spirit of enterprise is certain. The old City was the work of the fathers. The new will be that of the fathers, sons and grandsons.

It will glow resplendent in the sun of happy days. It will be new, clean, sanitary and eventually wealthy, let us hope also it will be devoted to the moral, as well as material, welfare of its inhabitants.

The question of where, what and how to build is following closely on the heels of financial settlements, and, always of prime importance, assumes, under our present peculiar situation, the nature of a complex or involved problem.

True, Market street, following a natural course, was and will remain the central or main artery of commerce, and, happily upon and near Market street stand clustered a number of the largest and best preserved buildings. These now serve as a nucleus or center from which, radiating in all directions, merit of a proposed investment may be somewhat approximated, and herein the judgment of a capable, experienced architect, familiar with the City as it was, and of sanguine temperament, comes into full play.

Having determined the utility of a certain location, the building to be erected thereon should meet all modern requirements and, moreover, discount the future to a certain extent.

In apportionments the building will generally follow the City Building Ordinance, its specific construction, however, is determined by the architect, and herein he should apply the old rule, that if an investment cannot afford a well constructed building, *that* investment is devoid of merit.

Exterior appearance, appropriate to the purpose the structure is to be devoted to, is of very great importance and should never be subordinated in the appraisal of merit. If the exterior properly proclaims its interior use, it accomplished its first aim from a business standpoint.

A large retail business established in a building of monumental exterior *suffers*. The appearance of the building eclipses the business carried on inside.

I assume that a meritorious investment for this particular business would call for a building the main street front of which should be comparatively plain, but with fine lines, and rich surfaces and generally a fine quality of workmanship and of materials. In illustration of this idea I append a sketch hereto,

taken from the routine of office work. It shows a double store and office building front.

The retail section of the City will certainly move uptown, that is "Up" Market street and across such streets as Van Ness and Fillmore, and if we remember that San Francisco will probably within fifty years be one of the greatest cities in the world, then investments up-town will appeal strongly to the sagacious business man, and the architect can safely place a high estimate on investments in that direction.

Wholesaling, shipping and light manufacturing will resume on the old ground, but finally extend more up-town. On the side towards the sea and extending entirely around the City westerly, the building will be of a lower average value, especially as regards residences. The tendency is, and will continue to be, to locate beyond the present confines of the city and away from the sea.

Finally a meritorious investment is developed in a building that cannot be shaken down by any earth disturbance. To me it is self-evident that buildings, which depend upon gravity for their stability, will be so disturbed.

On this subject in my next.

* * *

Wind Anchors for a Skyscraper

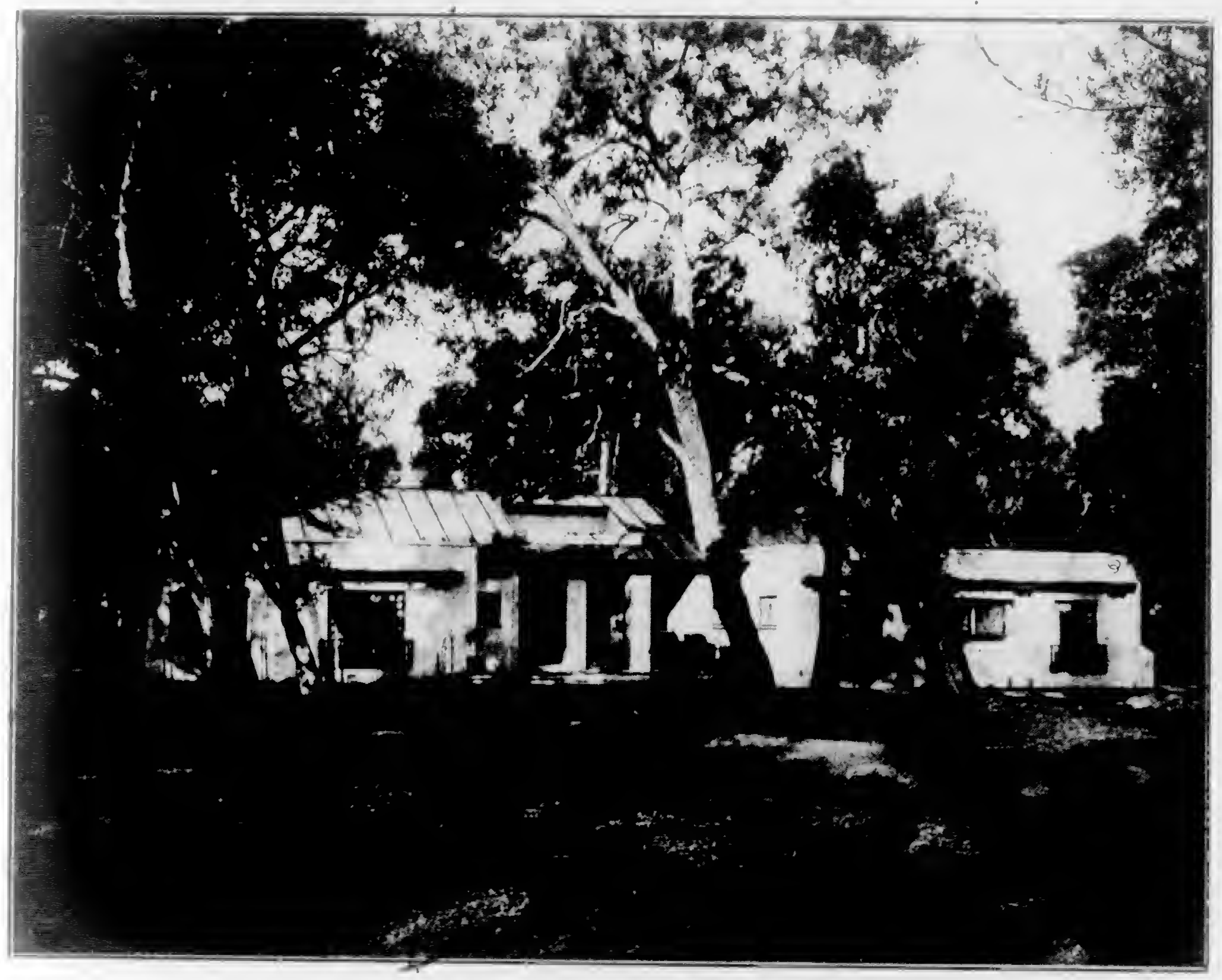
A SKYSCRAPER now in course of construction in New York is to have wind anchors so that it may be firmly braced against every gale. The new devices, which are being employed for the first time in any structure, have been put in position in the caisson piers which form the foundations of the new Singer building on Broadway, near Liberty street.

Skyscrapers of the ordinary type are not intended to withstand any uplifting strain. Their own weight prevents them from being disturbed. The new Singer building is to rise to a height of 625 feet, and is to have forty-one stories. The wind pressure, on account of the structure's great altitude, will be tremendous, and for that reason the building is to be literally tied to its foundations by an ingenious arrangement of steel rods. They will be three and a half inches in diameter and descend for nearly fifty feet into the concrete which form the caissons resting on solid rock eighty-five feet below the curb.

These rods, which are bolted together, are in lengths of from six to ten feet each, and the devices are put in before the cement is placed in the caisson. The lowest rod has on the end of it a great anchor plate, to which it is secured, and on the other end are bolted the two rods of the second section. The third section has four steel rods bolted alternately to those of the section below and connected with four rods above. The four rods are made to converge so that they may be carried through the grillage beams at the top of the caisson and the iron base of the column. They are then run up into the hollow column, which they are intended to support, for a distance of five feet and bolted into position. The column which is thus tied is built up to the very top of the structure. The strength of these rods is ample to counteract the effect of the severe storms.

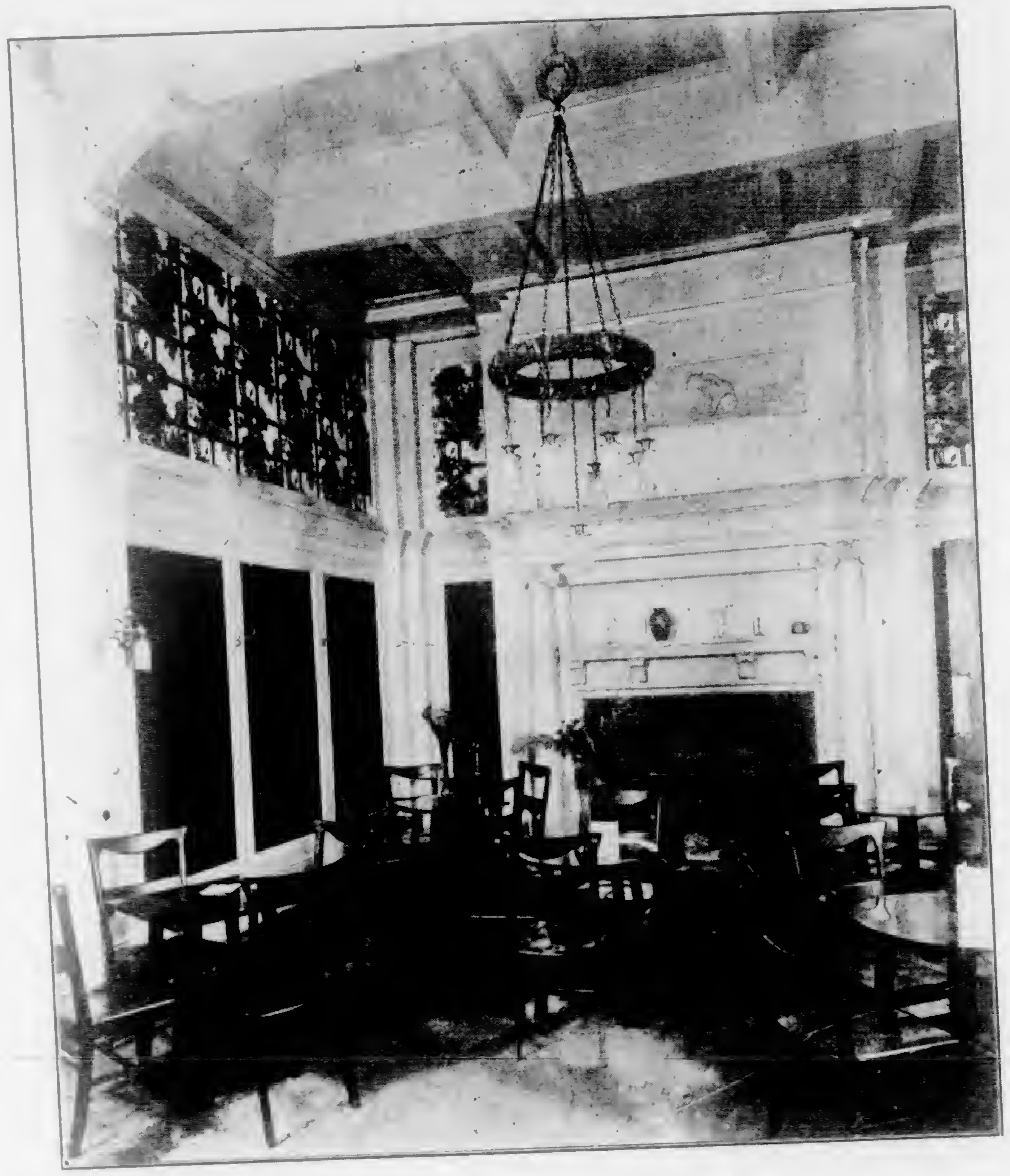
* * *

One of the most unique styles of finish for the exterior of a building has come to light in Milwaukee, Wis., where a one-story structure used for office purposes has been veneered with eight tons of grate coal, the largest size of hard coal sold in that section. The idea was conceived as an advertisement for the coal company occupying the building.



Showing the Possibilities of Reinforced Concrete in Residence Work. Bungalow at Fair Oaks, Cal.
Albert Farr, Architect. Richards Neustadt Co., Contractors

Another View of the Fair Oaks Bungalow



Tea Room, "The Sign of the Bear," Berkeley
Meyers & Ward, Architects

The Sonoma County Courthouse

THE Sonoma County Courthouse, as illustrated in this number, is to be built on the old Courthouse site at Santa Rosa, from plans by Architect J. W. Dolliver. The site is more favorable than is usually accorded to public buildings and has the advantage of occupying a square in the center of the town, with streets opposite the two main entrances to the building, which are on the north and south sides. This gives a distance vista of the principal feature of the design—the main portico colonnade. The wings are slightly less enriched and corners varied. The ends are symmetrical and the elevations of each side have a relative value to the whole design according to their importance. The plan is arranged to have a simple symmetrical arrangement so far as requirements would allow, and the different departments are so grouped to facilitate the performance of business for both public and working force. The central court is rectangular and the collonade supports the vaulted ceiling, which is inclosed by art glass, to throw good light to the innermost part of the building. The construction is to be a skeleton of steel carrying all loads to foundation, and reinforced concrete walls and floors.

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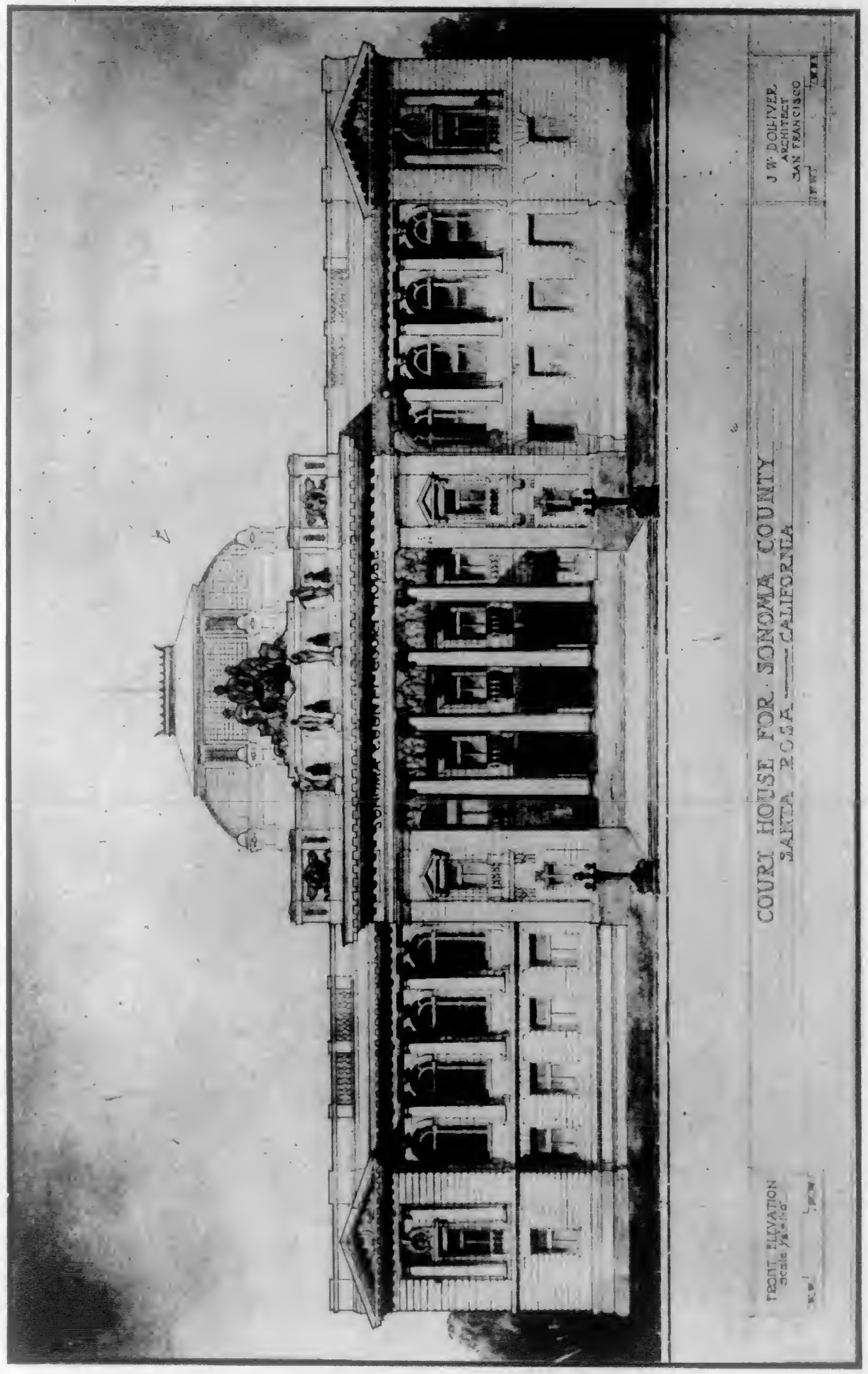
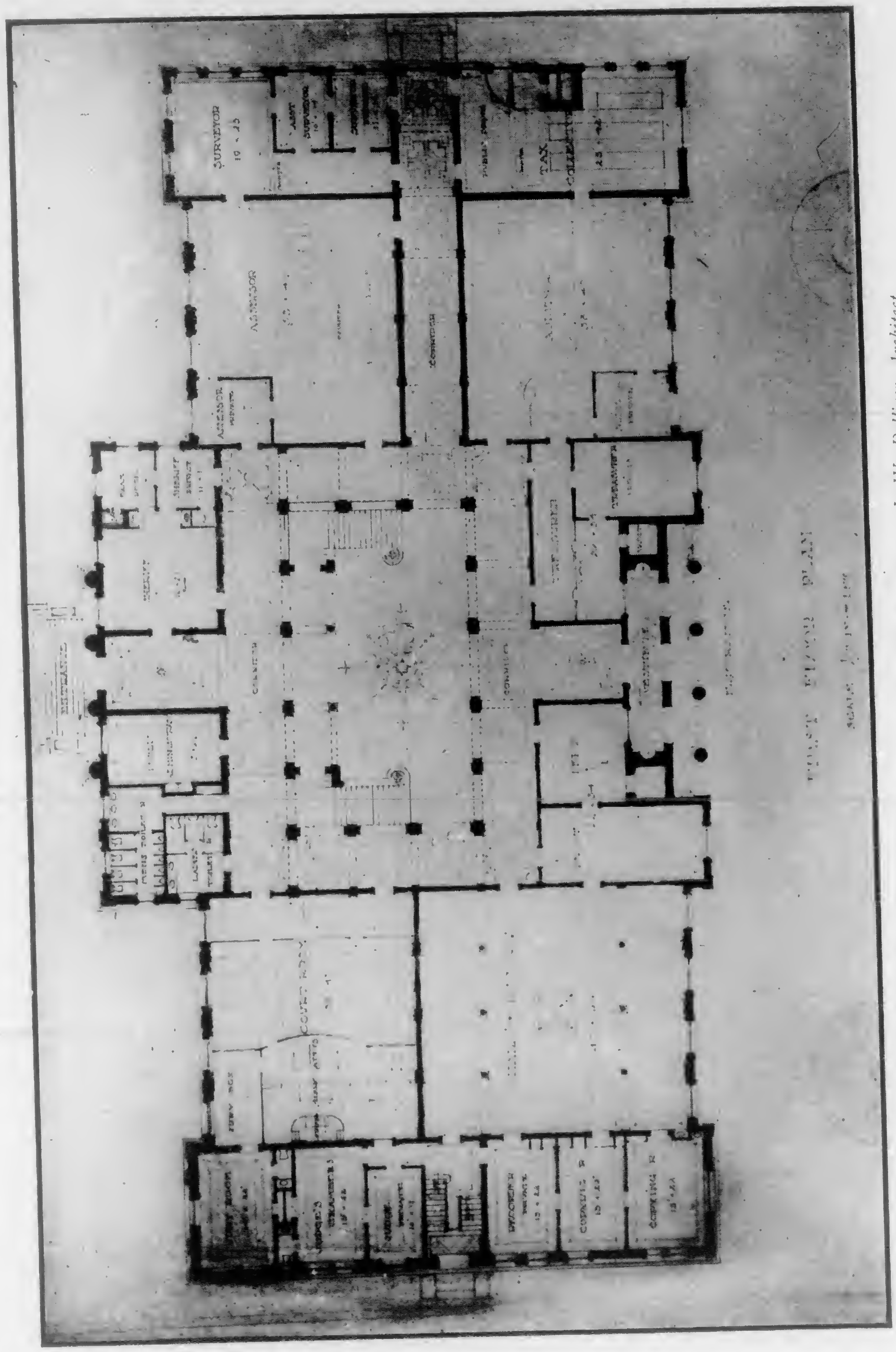
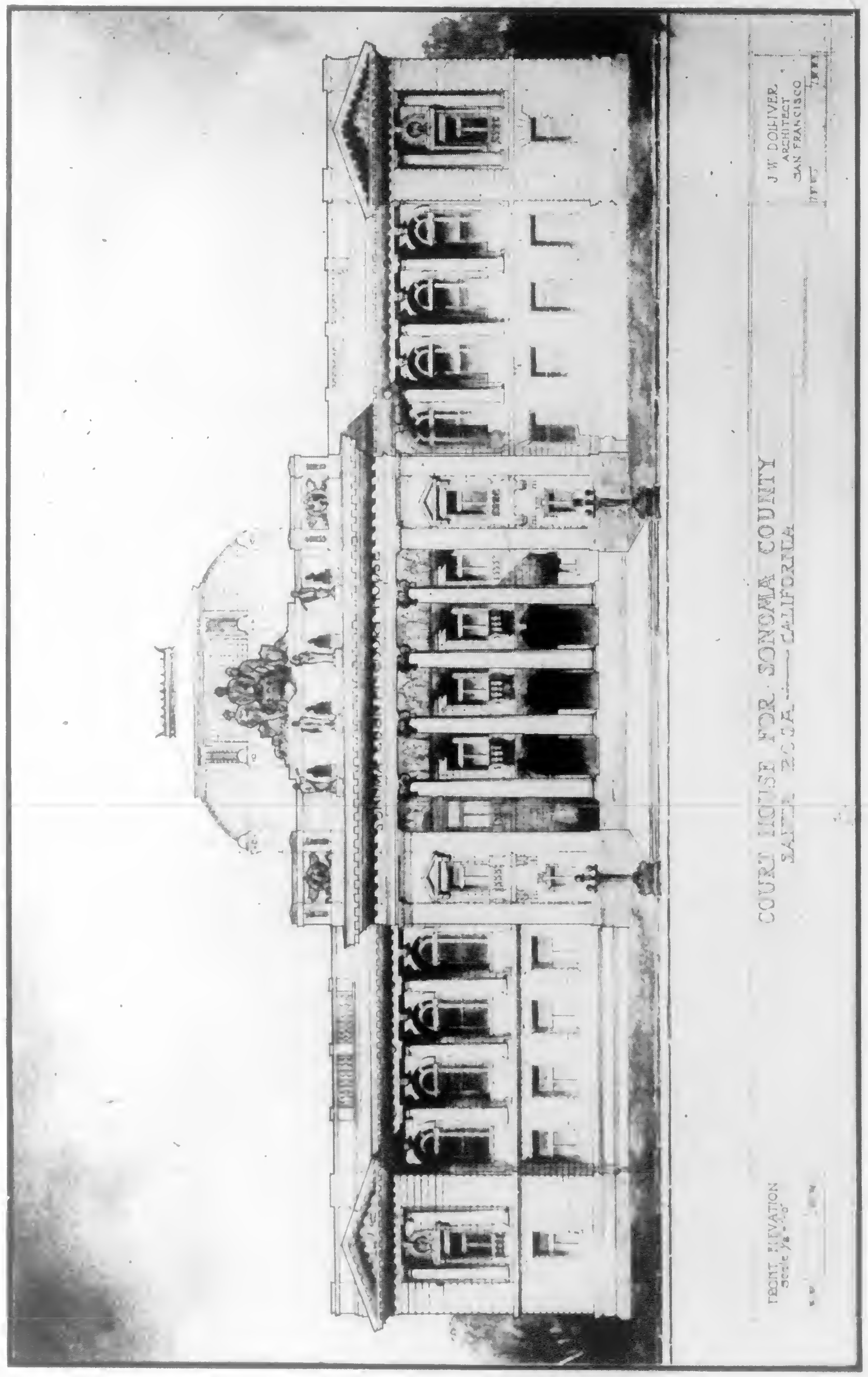


Front Elevation Sonoma County Court House, Santa Rosa, Cal. J. W. Dolliver, Architect



First Floor Plan, Sonoma County Court House, Santa Rosa. J. W. Dolliver, Architect



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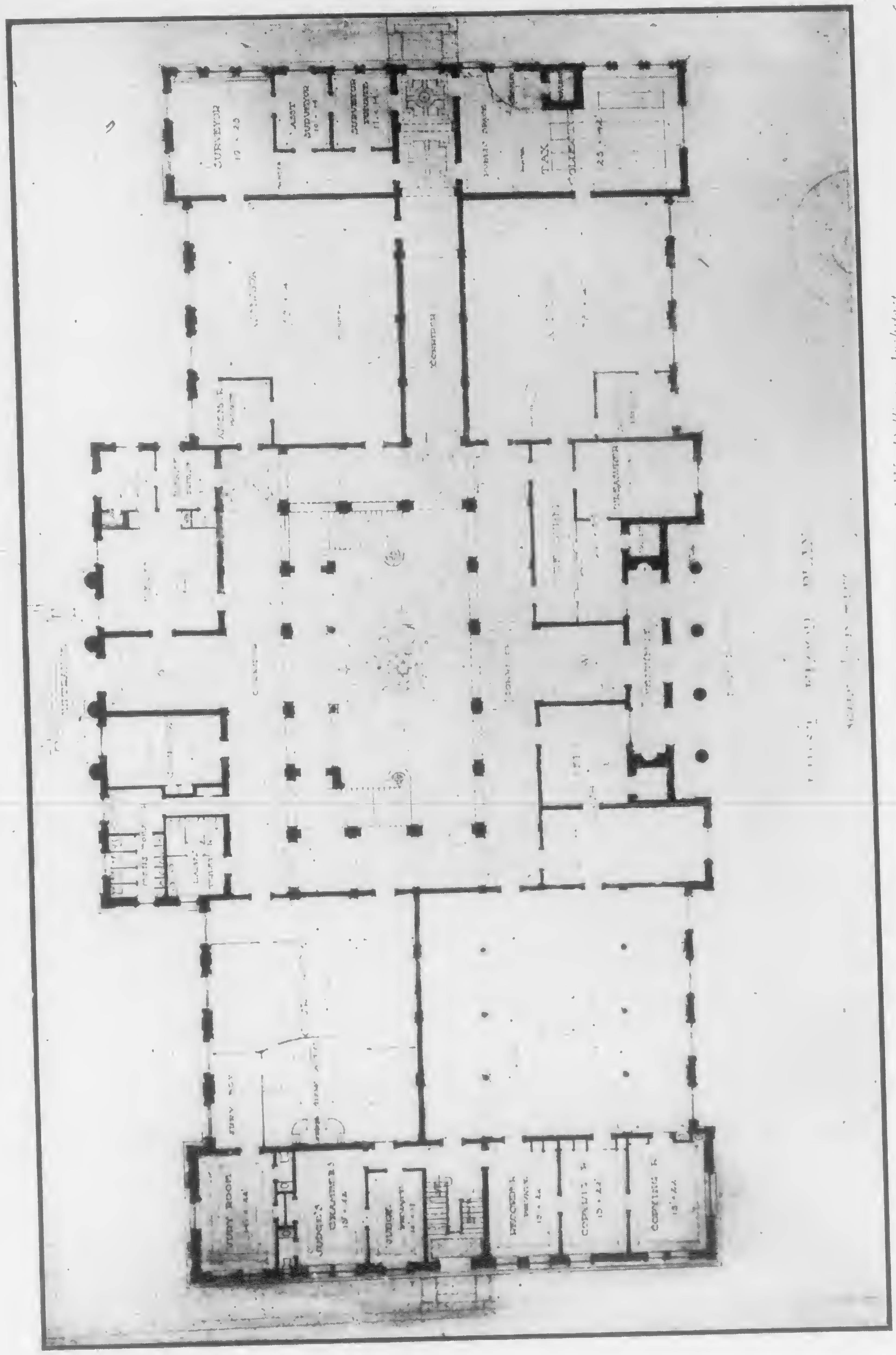

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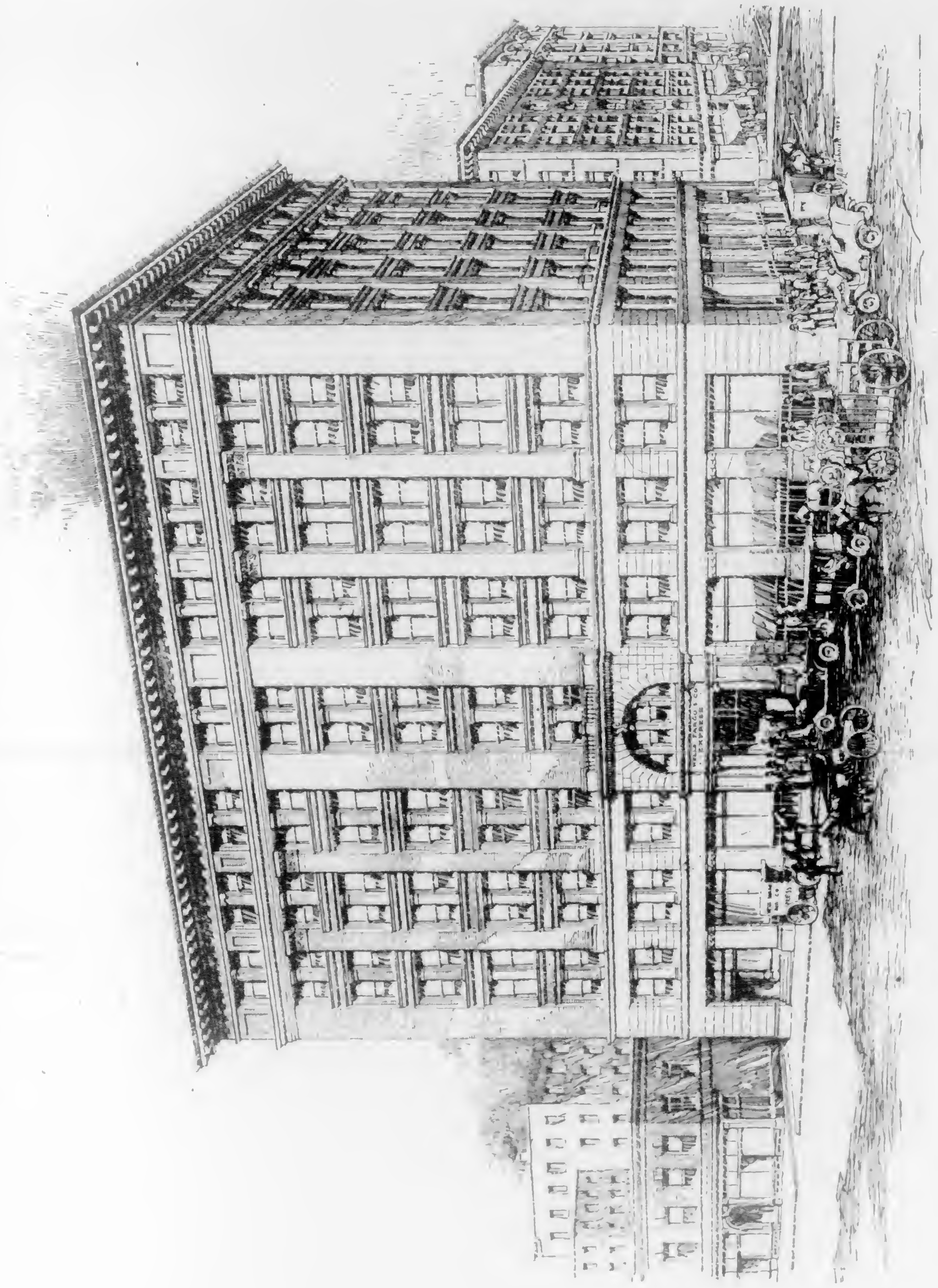
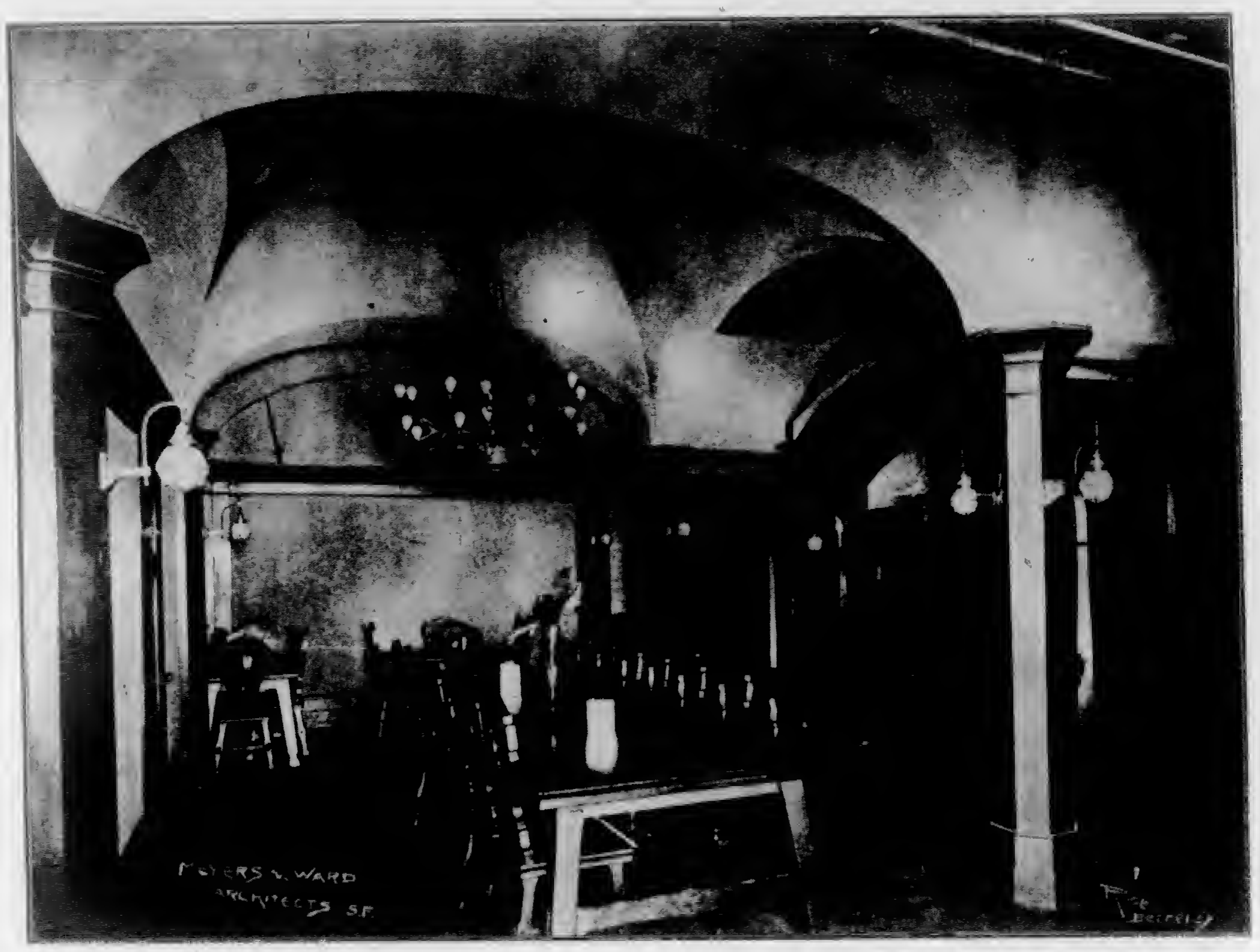


New Wells Fargo Building, San Francisco. Meyers & Ward, Architects



Tap Room "The Sign of the Bear," Berkeley
Meyers & Ward, Architects

Fears Repetition in San Francisco of Bixby Hotel Disaster

By A. W. RUSH, C. E.

I HAVE read with considerable interest the reports on the failure of the Bixby hotel building, and have noted the generally accepted conclusion that the concrete work was well and properly made and used, which, if true, leaves but one factor of any material importance in the discussion of cause; for the difference in concrete construction and any other, is mainly in putting together the required sections and selecting one already made for general use, i. e., taking the raw materials and placing or casting them together in such form and shape as may be required to serve the purpose, or to select a section, which has been made of other material, such as a steel beam or wood beam, and properly frame them into place. In either case the same forces are involved, and the same requirements must be met, so far as the strength is concerned, as the resistance of any beam to bending or breaking is the moment of two equal and opposite forces, consisting of thrust along the longitudinally compressed layers and tension along the longitudinally stretched layers in the section; and as the compressive resistance of concrete is quite as well known as that of iron or any other material, it is evident, of course, that it can be used in compression with as much certainty of safe construction as anything known at the present time. It moreover has many advantages over all other materials, not only on account of its fire resisting and time lasting qualities, but in its enormous resistance to vibratory conditions, having the greatest and most effective transmitting power of any material when combined with steel of the required proportion and proper placement.

The function of a beam or floor slab is to transmit the forces to the bearings on which they may rest, and to effect this, involves two relative forces acting with the same power. It does not matter what materials may be employed for this purpose. The requirements in resistance are the same. If a piece of timber be used, it must contain the required amount of equal tension and compression, and these two will always act with equal force; therefore, the limiting factor of strength would be that which was least in the section, i. e., an excess of any one factor would not make it stronger, but in many instances weaker.

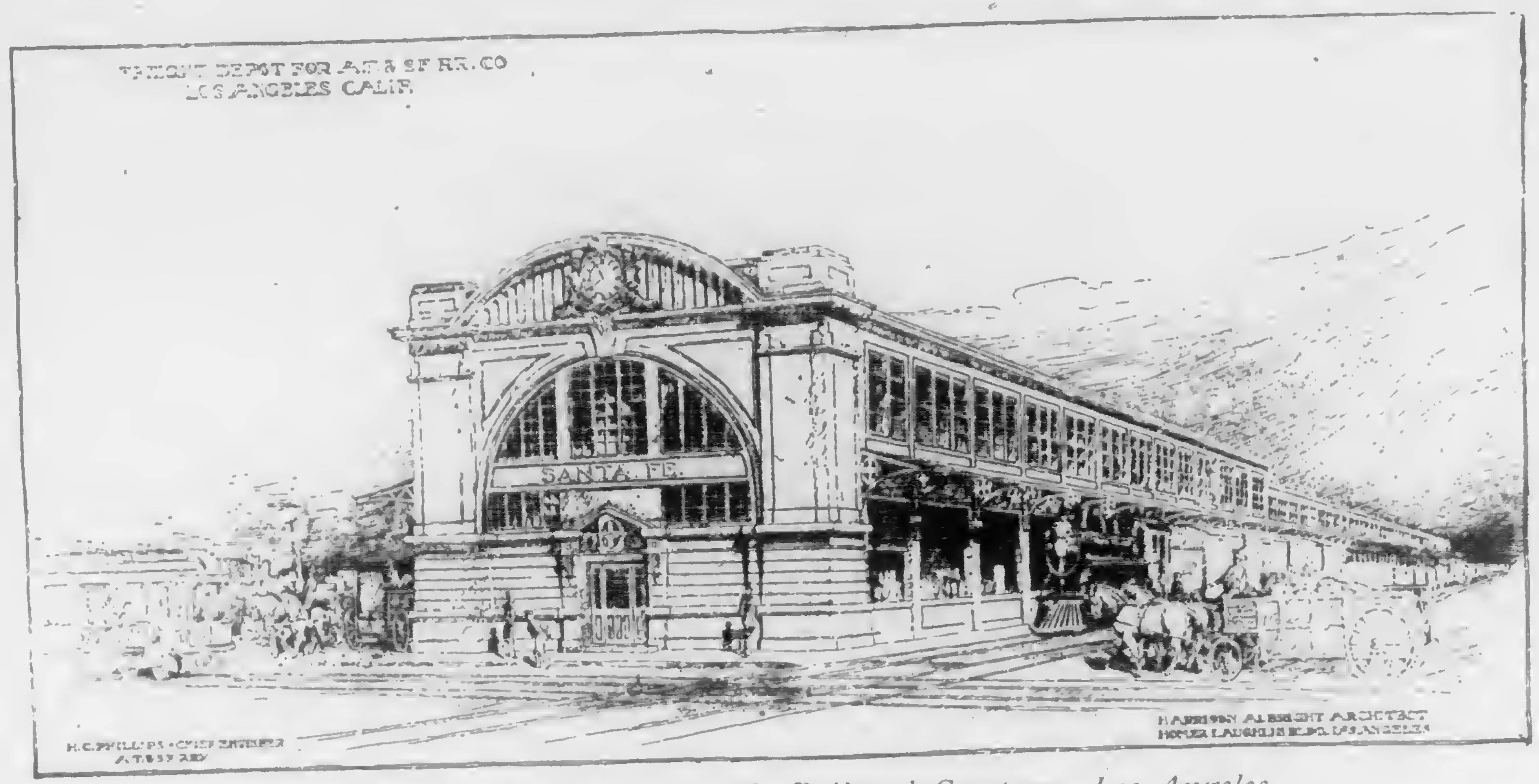
As the inert section is that portion of a beam or slab which is rendered incapable of active resistance by the forces of tension and compression gradually approaching each other with a resultant loss of power, and accordingly becoming neutral, it is important to note that while these forces may be said to act in opposite directions, they nevertheless do not oppose each other, and any attempt to create disorder in them by disregarding the area of their action can only result in failure.

The point at which these forces exhaust their energy is called the *neutral axis,* and the importance of its determination is of far greater moment in a concrete section than any other; because, unless this is known, the required area of compression cannot be known with sufficient accuracy, and accordingly the requisite quantity of steel and its proper relative placement cannot be found.

The destructive energy of a load on a beam or slab section at any point for which it may be computed, must be the determination of the required strength at that point, and for any distributed load will of course be at the center of the section, and this then becomes the distributing point for all forces; i. e., the forces which traverse a rectangular slab section are distributed from the center in all directions alike. That is to say, there is a concentration of forces at the center which governs the tension and compression throughout the section, and determines the lines of stress. That these lines radiate from the center to the beam sections surrounding it, no one having knowledge of the subject will deny; and hence, it is a fact that rods or bars running through the section in one direction do not and cannot take only so much of the tension as may be developed in that direction, while the radial forces are left to act with all their destructive power. It is evident therefore that the shape of the steel section and its placement most certainly determines its value as a reinforcement, provided of course that the necessary quantity be used; and any form or system of reinforcement that does not consider the importance of a uniform distribution of tenacity more generally than can be obtained by the use of bars or rods, as they are now being placed most certainly fails in reaching the standard of good and safe construction.

A glance at some of the work in progress in this city cannot fail to impress the observer with an anticipation at least of a repetition of the Bixby hotel failure.

Any system of reinforcement to meet the requirements of safe building must be a structural system. The beam and column sections must be capable of standard connections, and such, that when installed in the structure will be in their right place, and cannot be displaced by casting the concrete sections around them. The many failures in different parts of the country on account of the use of a loose rod or bar method of reinforcement, has created a demand on the part of careful investors for a more substantial and reliable method of construction. Such a system has been produced, and is now being used in other parts of the country with most satisfactory results.


FREIGHT DEPOT FOR A.T.& S.F. RR. CO
LOS ANGELES CALIF.
SANTA FE
H.C. PHILLIPS - CHIEF ENGINEER
A.T.& S.F. RY
HARRISON ALBRIGHT ARCHITECT
HOMER LAUGHLIN BLDG. LOS ANGELES

Freight Depot for the Santa Fe Railroad Company, Los Angeles
Harrison Albright, Architect

Reinforced Concrete Construction in Southern California

By HARRISON ALBRIGHT, Architect.

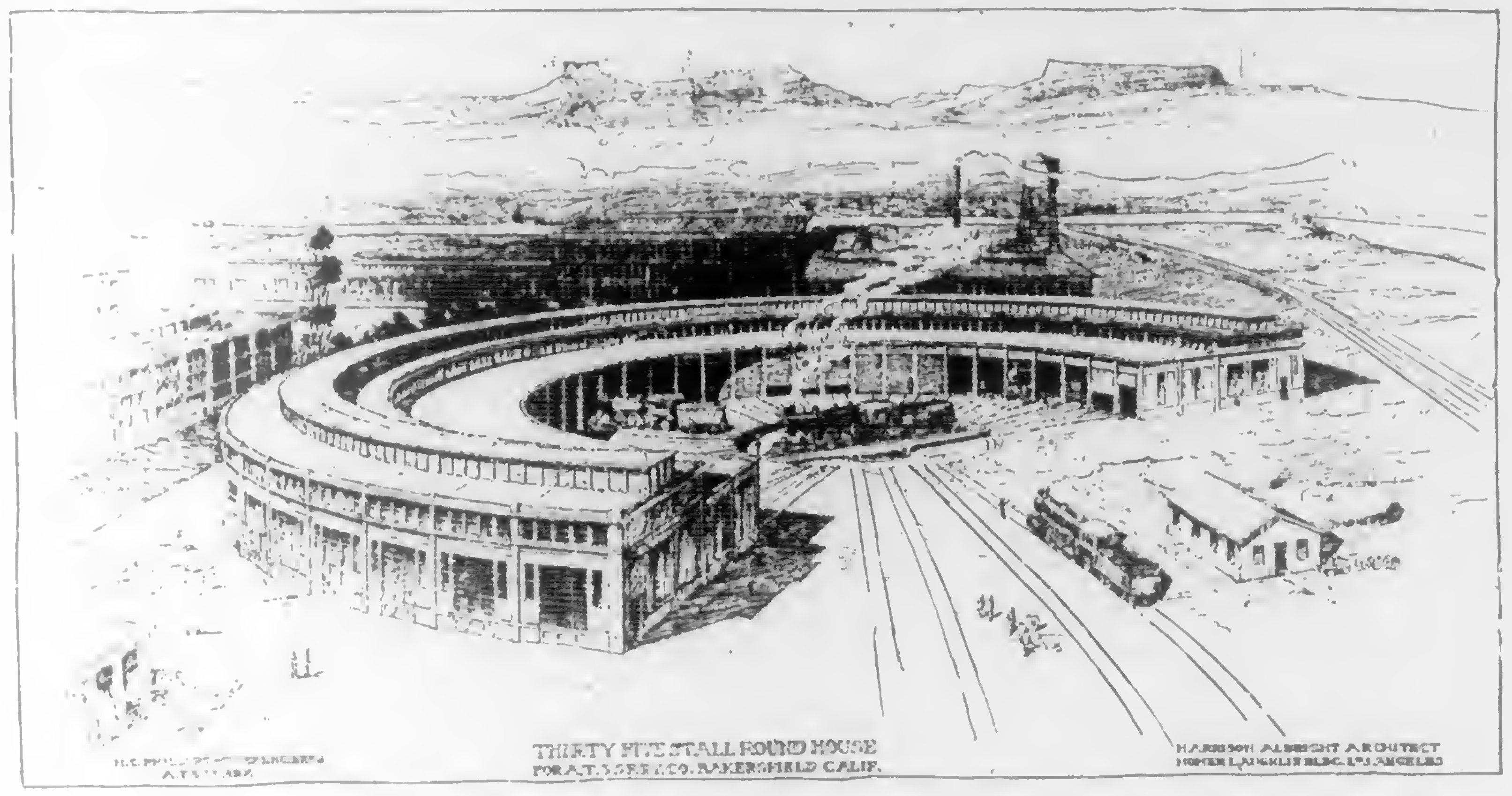
THAT reinforced concrete construction is highly regarded and greatly favored is evident by the great amount of that class of work now under construction in California and, for that matter, throughout the world. The illustrations accompanying this article are of concrete buildings either finished or under way in Southern California and Arizona. All were designed by the writer. The list includes a freight and passenger depot, hotel, curio store and power house at Ash Fork, Arizona, round houses for the Santa Fe Company, aggregating in cost over $1,000,000; the U. S. Grant hotel, San Diego, to cost $750,000, and a handsome office building for the San Diego Union Company.

When a great railroad corporation like the Santa Fe Company and such well-known and sagacious business men as U. S. Grant, Jr., and John D. Spreckels, adopt reinforced concrete construction and spend their money therefor it is reasonable to conclude that they have fully informed themselves of the merits of the construction and are convinced of its practicability.

Personally, I believe reinforced concrete is the only construction that does not detriorate with age and the only construction that becomes better with age.

The U. S. Grant hotel at San Diego, California, is now being constructed on the site of the old Horton House, for U. S. Grant, Jr., son of the late General and President Grant. It will cover a ground area of 200 feet square on D street extending from Third to Fourth streets, opposite the city park.

The basement will extend to street curbs on D street, Third street and Fourth street, making it 214 by 228 feet. It will contain rooms for mechanical


THIRTY FIVE STALL ROUND HOUSE
FOR A.T.&S.F.R.Y.CO. BAKERSFIELD CALIF.
HARRISON ALBRIGHT ARCHITECT
HOMER LAUGHLIN BLDG. LOS ANGELES

Round House, Bakersfield. Harrison Albright, Architect

equipment consisting of heating, lighting, refrigerating cleaning and laundry plants.

The basement will also contain five sample rooms, each 19 by 60 feet; wine room, 19 by 60 feet; rathskeller, 64 by 77 feet; barber shop, 16 by 65 feet and the following for both ladies and gentlemen: billiard rooms, swimming pool, Turkish, Russian and hydropathic baths and accessories.

The lobby will occupy the corner of Fourth and D streets. In the rear of the lobby will be located the following: General office, manager's office, manager's private office, news and cigar stand, telephone and telegraph rooms and toilet rooms for both ladies and gentlemen. In the rear of the lobby on Fourth street will be the bar room, 19 by 58 feet, and the ladies' buffet. Adjoining these on Fourth street will be the cafe.

The main dining room, 99 by 118 feet, will occupy the corner of Third and D streets. In the rear of the main dining room will be dining rooms for the officers, nurses and valets.

The kitchen will be located in the rear of the main dining room and to the left of the cafe. Located as it is, access is had to the main dining room and the cafe on the first floor.

There is a mezzanine floor upon which is located the library, reading and writing rooms, servants' dining room, bakery and several private dining rooms.

Above the ground floor the building will be in the form of the letter E and in the six stories which comprise this part of the building there will be 412 bedrooms, each bedroom having access to an adjoining bedroom and bathroom and each bedroom containing a clothes' closet, lavatory, radiator and long distance telephones.

The open space on the second floor between the two wings, 100 by 112 feet, will be devoted to a palm garden, the entrance of which is under the great arch between the ladies' and gentlemen's parlors, both of which overlook the palm garden. The "Arch of Welcome" in the rear of the palm garden, the pergola in front of it and the fountain in the center are features that will linger long in the minds of those who visit the hotel.

On the eighth floor are the children's nursery and two assembly rooms with check rooms, dressing rooms and toilets adjoining.

On the ninth floor is the ball room with stage at one end and refreshment room at the other, also a palm room, retiring rooms, check rooms and cloak rooms.

In addition to the palm garden on the second floor, between the Third and Fourth-street wings, there will be two other roof gardens on the Third and Fourth-street wings.

The footings, columns, girders, beams, floors, etc., will all be constructed of reinforced concrete. The floors of the lobby, cafe, bar room, toilet rooms and bath rooms will be of mosaic tile, while the floors of the billiard rooms, ball room and parlors will be of wood mosaic. The floors of all the other rooms and corridors will be of cement with wood fastenings for carpets imbedded therein. The interior trim will be birch finished a rich mahogany color.

The walls and ceilings of all the rooms throughout the building will be beautifully decorated. There will be four high-speed hydraulic passenger elevators, one freight elevator and two sidewalk lifts.

The Union building at San Diego will be the new home of the San Diego Union and the Evening Tribune, as well as that of the various Spreckels companies and the Cuyamaca Club.

The building is being constructed for the San Diego Union Company, one of the Spreckels' companies, headed by John D. Spreckels and Brothers. It will occupy the site of the present Union building and in addition thereto forty-three feet to the south and forty-two feet to the west which was recently acquired. This will make the total dimensions 150 feet on D street by 85 feet on Third street.

The footings, columns, girders, beams and floors as well as the roofs and walls and external ornamentation will be of reinforced concrete. The building will be six stories high above the basement.

The basement will extend under the sidewalk on both Third and D streets and will contain the mechanical equipment of the building as well as the mechanical equipment of the Union and Evening Tribune, and in addition a restaurant and accessories.

The entrance lobby of the building will be in the center on D street. To the right of the entrance lobby will be three stores, each 20 by 85 feet, to the left of the lobby will be three rooms, each 20 by 40 feet, all of which will have entrances from D street. In the rear there will be two stores each 20 by 90 feet, with entrances from Third street.

The second floor will contain the offices of the various Spreckels companies, in addition to a law library to cost $10,000 for the accommodation of tenants of the building.

The remaining three floors will contain in all eighty-one offices, or twenty-seven offices to each floor, with toilets for both men and women.

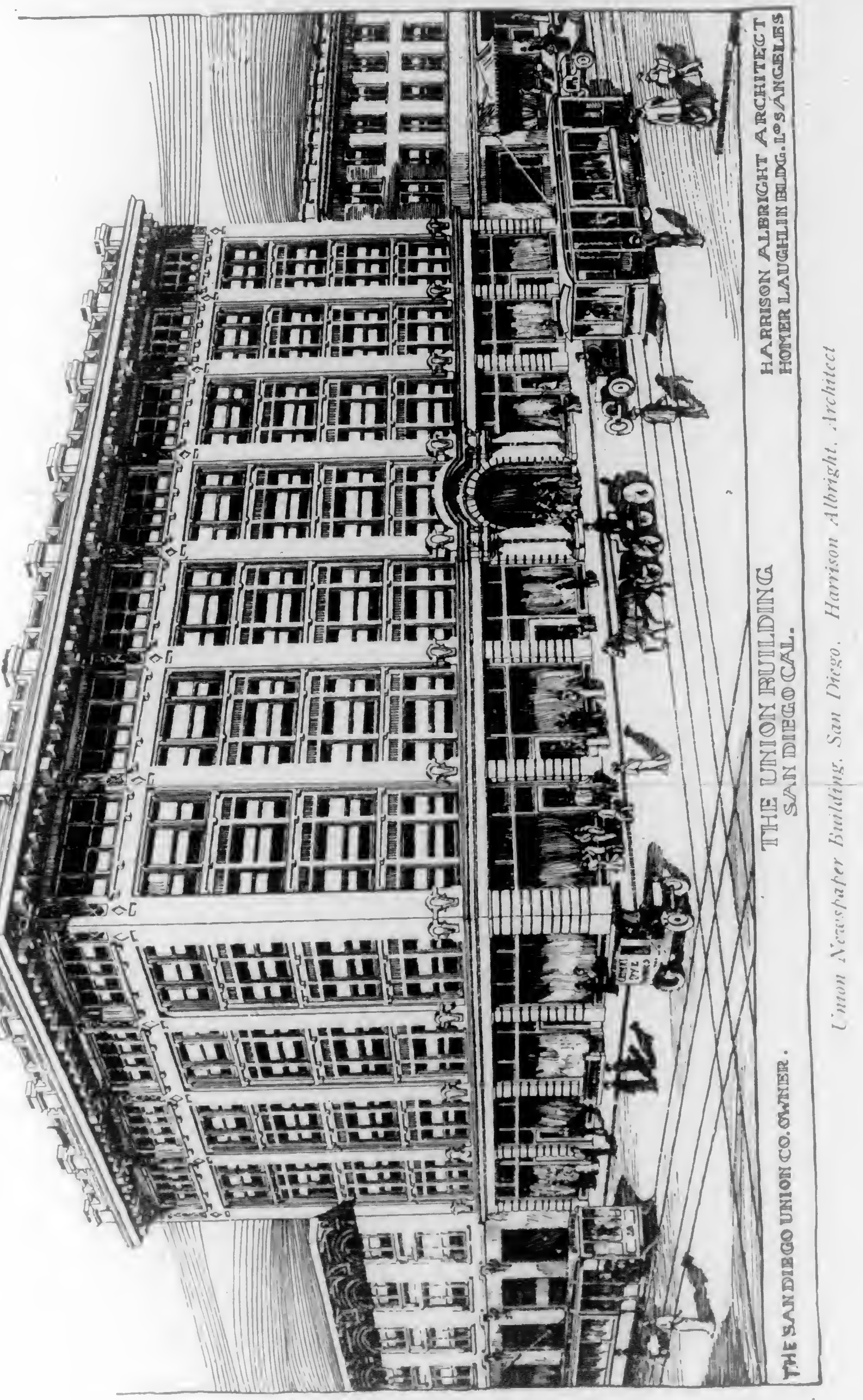
The arrangement of the building is such that all the offices will be opened to the outside air. No office will have less than two windows and many will have three or more. The offices will average in size 14 by 19 feet.

All offices will open directly from the corridors and will be communicating. They will contain clothes closets, lavatories and radiators.

The sixth floor is for the accommodation of the Cuyamaca Club.

The finish throughout the building will be mahogany. There will be two electric passenger elevators running from the basement to the sixth floor. There will be a roof garden over the entire building for the use of the club occupying the sixth floor. The building will be heated by steam, lighted by electricity and cleaned by the vacuum suction system.

The business offices of the two papers in the new building will be on



THE UNION BUILDING
SAN DIEGO CAL.
HARRISON ALBRIGHT ARCHITECT
HOMER LAUGHLIN BLDG. LOS ANGELES
THE SAN DIEGO UNION CO. OWNER.

Union Newspaper Building, San Diego. Harrison Albright, Architect

the first floor and on the corner as at present. The mechanical plant will be greatly enlarged, including a new Hoe perfecting press, capable of turning out ten thousand copies of a sixteen-page paper every hour, also a stereotyping plant.

The passenger depot, hotel, curio store and power house, now under construction at Ash Fork, Arizona, for the Santa Fe, will have a railway front of 450 feet and a depth of 215 feet. The structure will be virtually four buildings connected by colonnades.

The pessenger depot contains the ticket office, ladies' and gentlemen's waiting rooms, baggage room, and toilet rooms for ladies, gentlemen and employes.

The hotel contains an office, check room, reading and writing room and news and cigar stand, bar room, barber shop, lunch room, etc.

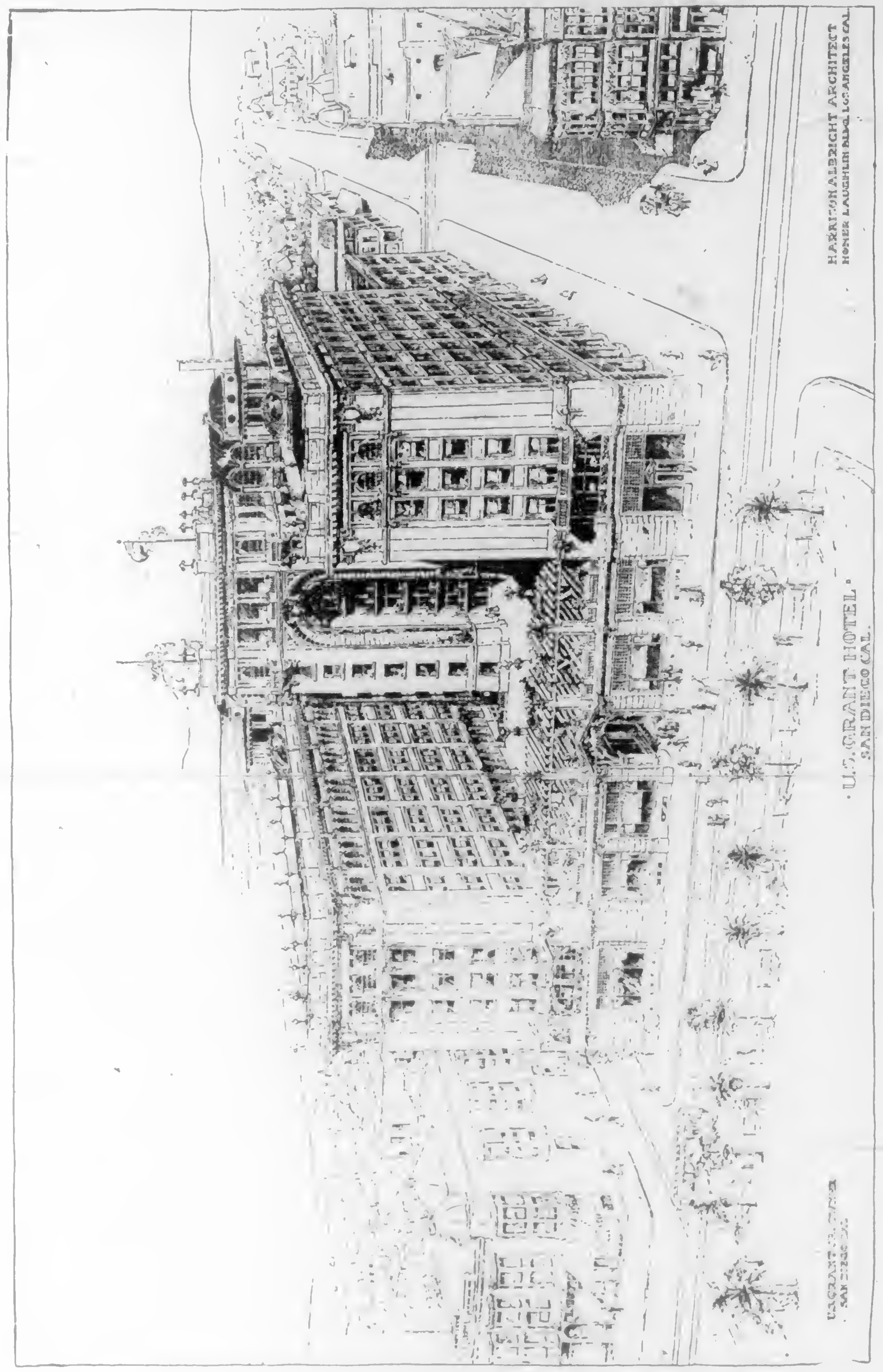
The Bakersfield, California, round house is 850 by 94 feet, and has thirty-five stalls, the San Bernardino, Cal., round house is the same while the Point Richmond round house has ten stalls and the Williams, Arizona, round house, six stalls.

All stalls of each building are alike and are of the following dimensions: 14 feet wide on the inner circle and 25 feet wide on the outer circle. Each stall is 92 feet long, divided into two sections. The stalls have the distinction of being the only two-span reinforced concreted round house stalls in existence. They are also the largest. The columns in the inner circle are 22 by 39 inches, the columns in the center of stall are 18 by 40 inches, and the columns in the outer circle are 22 by 39 inches.

The columns in the outer circle of the stalls and in the center of stalls are of the dimensions given for the purpose of carrying the traveling crane beam girders. Above the crane beam girders the columns are reduced in area and carry the roof girders. Radial lines of girder A are placed on a slope on the columns 17 feet 6 inches above rail on inner circle and 26 feet above rail on the outer circle. Ten longitudinal beams intersect the roof girders and on top of the roof girders and beams is a roof slab four inches thick. The roof girders in the high part of the building and which carry the clerestory longitudinal beams and roof are 11 by 33 inches. Crane beam girders carrying the traveling crane are 13 by 30 inches on both the inner and outer circles. The longitudinal beams are 5 by 13 inches. The clerestory girders are 5 by 18 inches. The exterior walls are seven inches thick. The reinforcement in the footings, columns, girders, beams, etc., is varied on account of different loadings. The footings, columns, girders, beams, walls, roofs, etc., of the building as well as the walls of the ring pits, engine pits, drop wheel pits, etc., are of reinforced concrete. The doors of inner circle are rolling steel; all other doors and windows are wood glazed with wire glass.

The railway company has adopted my design as standard for all future round houses, after much deliberation as to the initial expense, cost of maintenance and cost of insurance. The initial cost was found to be less than any other type of fireproof construction; the cost of maintenance estimated at zero, for reinforced concrete does not deteriorate with age but on the contrary improves with it. The cost of insurance is less than any other type of construction, the liability of fire being so slight that no insurance will be carried.

The Los Angeles freight depot is being constructed under the direction of General Manager A. G. Wells and Chief Engineer H. C. Phillips of the Santa Fe railway company.



U. S. Grant Hotel, San Diego. Harrison Albright, Architect

The extreme dimensions of the building are 1320 feet in length by 91 feet in width. The building is being constructed entirely of reinforced concrete, with clear spans between columns of sixty feet.

One of the many features of the building will be the ease with which it can be converted from a closed building into an open building. The turning of two levers will open one-half mile of rolling steel doors, and the turning of two other levers will open one-half mile of pivoted transom windows.

One half of the length of the building on the ground floor will be devoted to inbound freight, the other half to outbound freight. In the center of the building, on the ground floor, will be the yard foreman's private office, the yard foreman's clerks' office, the transfer company's office and the general toilet.

On the second floor will be the freight agent's private office, department offices, etc.

There will be twenty-four Fairbanks depot scales installed under the supervision of William P. Bemus, expert scale builder, for weighing all inbound and outbound freight. There will be two large freight elevators with automatic gates for conveying from first floor to second floor, supplies for general freight office and files from the general offices of the company and unclaimed freight.

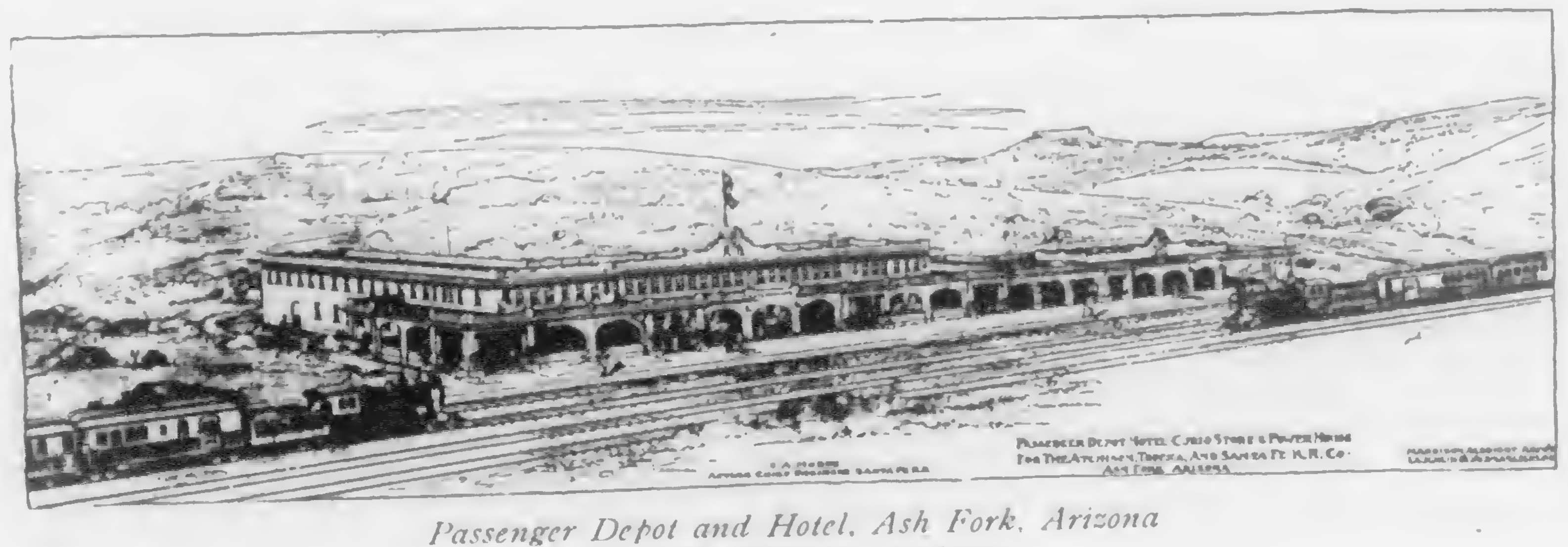
The orders of the general freight agent, T. W. Pate; the chief clerk, A. G. Compton, and the yard foreman, B. F. Rosenfeldt, will be transmitted to their various clerks by means of intercommunicating telephones and pneumatic tube service.

The building will be equipped with a watchman's time detector and an automatic sprinkler and an air-suction cleaning system, and will be heated by steam and lighted by electricity.

* * *

Durability of Concrete

The imambra connected with the Mohammedan mosque at Lucknow, India, contains the largest room in the world without columns, being 162 feet long, 54 feet wide and 53 feet high. It was built during the great famine in 1784 to supply work for a starving people. It is a solid mass of concrete of simple form and still simpler construction. In its erection a mold of frame work of timber and bricks several feet in thickness was first made, which was then filled with concrete. The concrete was allowed to set and dry about a year, when the mold was removed. Although the building has been standing for 122 years, it is said to show no sign of decay or deterioration.



Passenger Depot and Hotel, Ash Fork, Arizona
Harrison Albright, Architect

Cement and Concrete

A Surface Finish for Concrete

How a Pleasing Texture is Obtained by a Simple and Inexpensive Process. Conforms to the Plastic Character of the Material.

By HENRY H. QUIMBY, M. Am. Soc. C. E.[*]

THE concrete surfaces shown in the accompanying photographs are easily obtained. The process consists in completely flushing the face against the form, removing the form after the material has set but while it is still friable, and then immediately washing and rinsing the surface with water.

The washing removes the film of cement which has formed against the mold, and exposes the particles of sand and stone. The appearance then depends, of course, upon the character of the aggregate in the concrete and the uniformity of its distribution in the mixture. As in well mixed concrete the cement merely fills the voids between the grains of the sand, and the sand fills the voids between the pebbles or particles of crushed stone, the cement visible in this finished surface is so small a percentage that it has very little influence on the color of the work.

A convenient means of securing a well flushed front uniform in texture is to make a fine concrete with the crushed stone or pebbles screened to not exceed say three-eighths inch, and apply it to the face form with a trowel just in advance of the body concrete, and ram the concrete into it or joggle the two mixtures together so as to ensure an intimate union. This fine concrete, or granolithic mixture as it is generally called, may be made of different colored and different graded aggregates for different portions of a structure to compose a color scheme.

The appearance may also be controlled somewhat by the extent of the washing, for if the work be done at the right time, the washing brush can be plied to remove the mortar to a considerable depth between the stones, leaving the stone in a very decided relief and producing a rough coarse texture which, by the way, seems to be the most admired by the majority of observers.

The time to be allowed for setting before washing must be determined with regard to the nature of the cement used and to atmospheric conditions. Quick-setting cement and warm weather call for removal of form within eight or ten hours. The usual practice in summer, using almost any of the American Portland cements, is to remove the forms on the day following the deposit of the concrete. Of course this must not be done with the under or supporting portion of forms for arches and floors where the concrete is subject to stress, par-

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[*] Engineer of Bridges, Bureau of Surveys, City of Philadelphia. Mr. Quimby's article is reprinted from Cement Age by special permission of the publishers.

Fig. I. Example of Concrete Composed of 1 Part Cement, 2 Parts Yellow Bank Sand and 3 Parts 3/8-Inch Screened Stone. Actual Size

Fig. II. Pebble and Sand Concrete with Scrubbed Surface Composed of 1 Part Cement, 2 Parts Bar Sand and 3 Parts 3/16 Inch White Pebbles. Actual Size

Cement and Concrete

A Surface Finish for Concrete

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A convenient means of securing a well flushed front uniform in texture is to make a fine concrete with the crushed stone or pebbles screened to not exceed say three-eighths inch, and apply it to the face form with a trowel just in advance of the body concrete, and ram the concrete into it or joggle the two mixtures together so as to ensure an intimate union. This fine concrete, or granolithic mixture as it is generally called, may be made of different colored and different graded aggregates for different portions of a structure to compose a color scheme.

The appearance may also be controlled somewhat by the extent of the washing, for if the work be done at the right time, the washing brush can be plied to remove the mortar to a considerable depth between the stones, leaving the stone in a very decided relief and producing a rough coarse texture which, by the way, seems to be the most admired by the majority of observers.

The time to be allowed for setting before washing must be determined with regard to the nature of the cement used and to atmospheric conditions. Quick-setting cement and warm weather call for removal of form within eight or ten hours. The usual practice in summer, using almost any of the American Portland cements, is to remove the forms on the day following the deposit of the concrete. Of course this must not be done with the under or supporting portion of forms for arches and floors where the concrete is subject to stress, par-

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*Engineer of Bridges, Bureau of Surveys, City of Philadelphia. Mr. Quimby's article is reprinted from Cement Age by special permission of the publishers.

Fig. I. Example of Concrete Composed of 1 Part Cement, 2 Parts Yellow Bank Sand and 3 Parts ¾ Inch Screened Stone. Actual Size

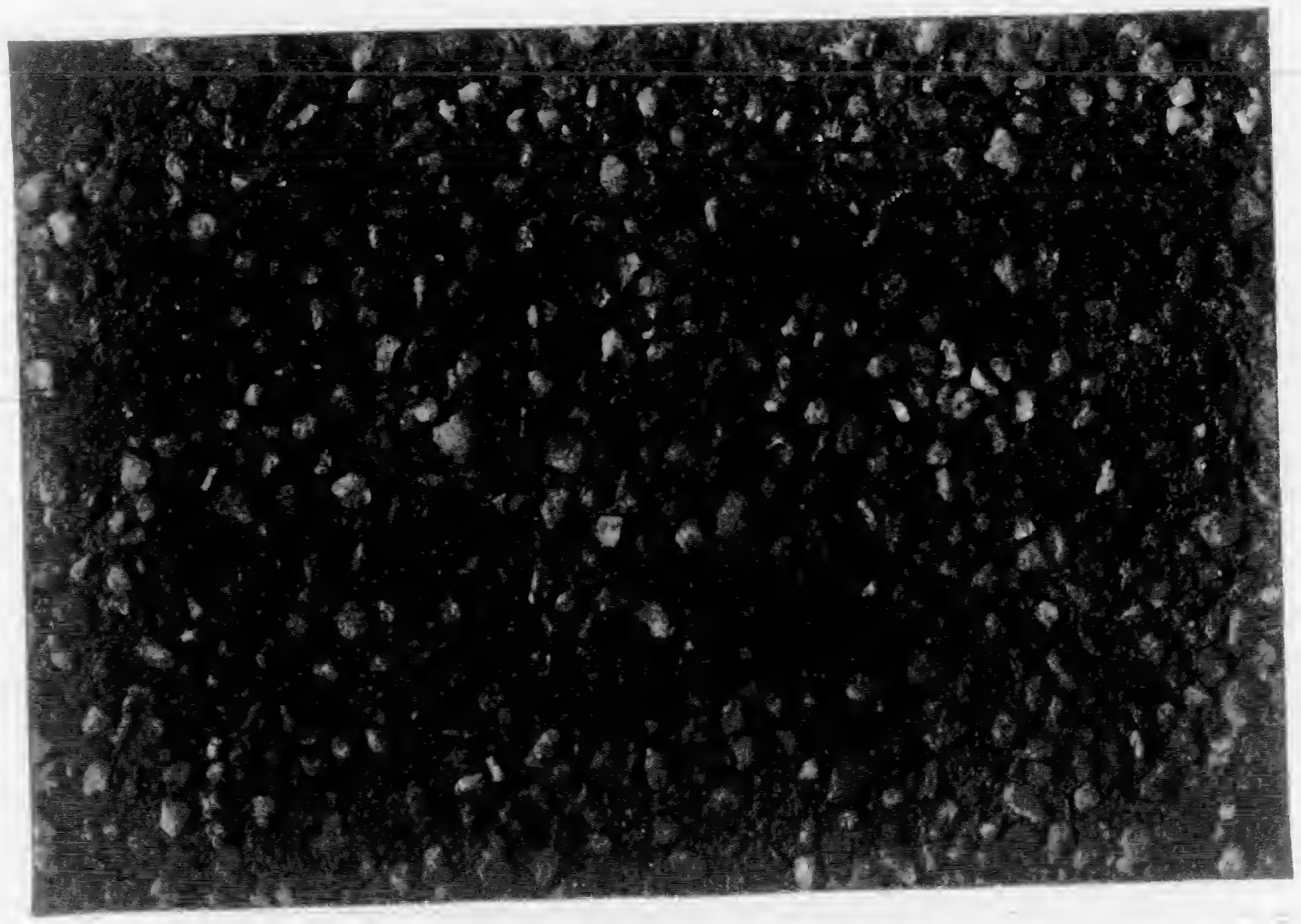


Fig. II. Pebble and Sand Concrete with Scrubbed Surface Composed of 1 Part Cement, 2 Parts Bar Sand and 3 Parts 3/8 Inch White Pebbles. Actual Size

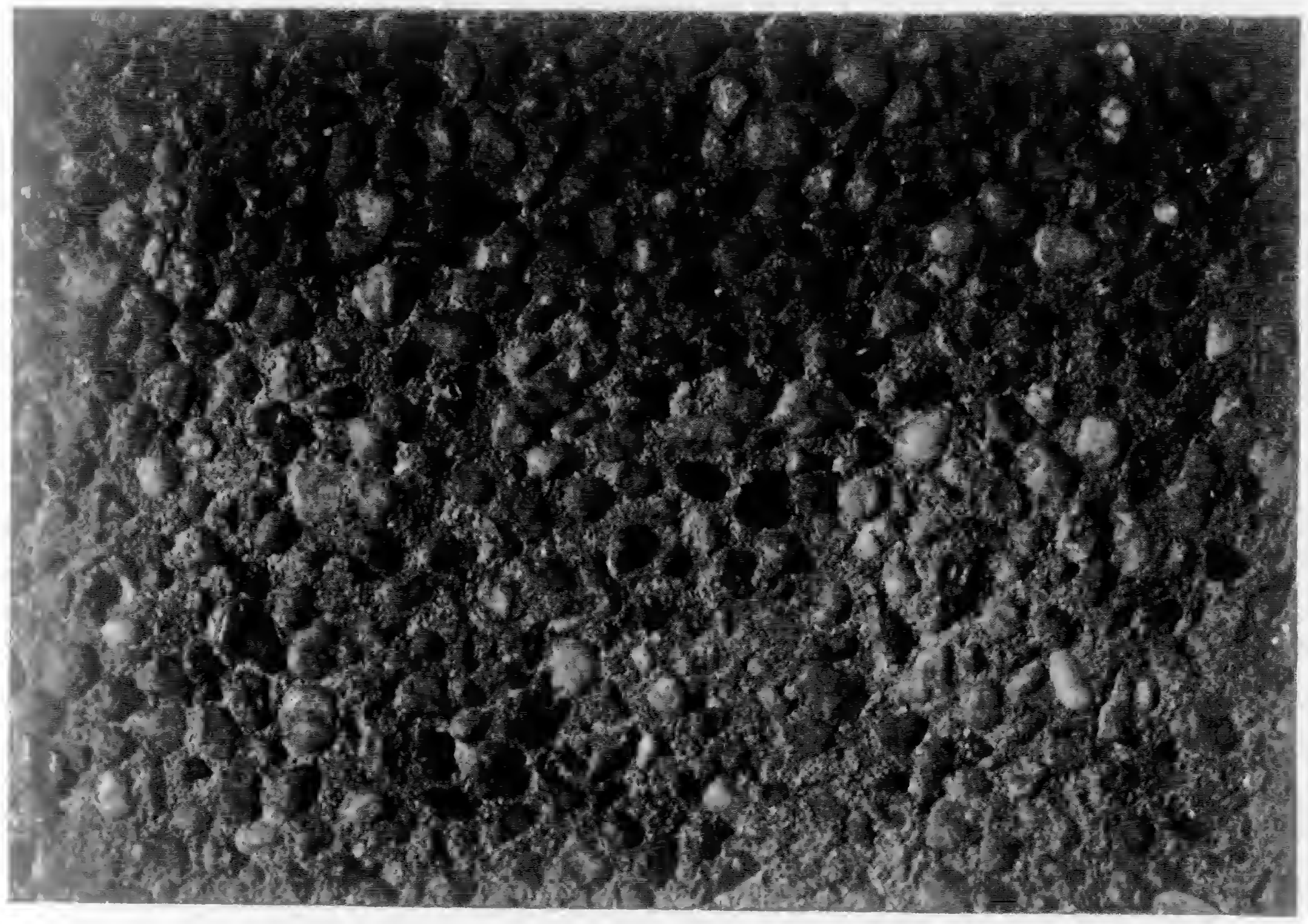


Fig. III. Sand and Yellow Pebble Concrete Composed of 1 Part Cement 2 Parts Bar Sand and 3 Parts Screened Yellow Pebbles. Actual Size

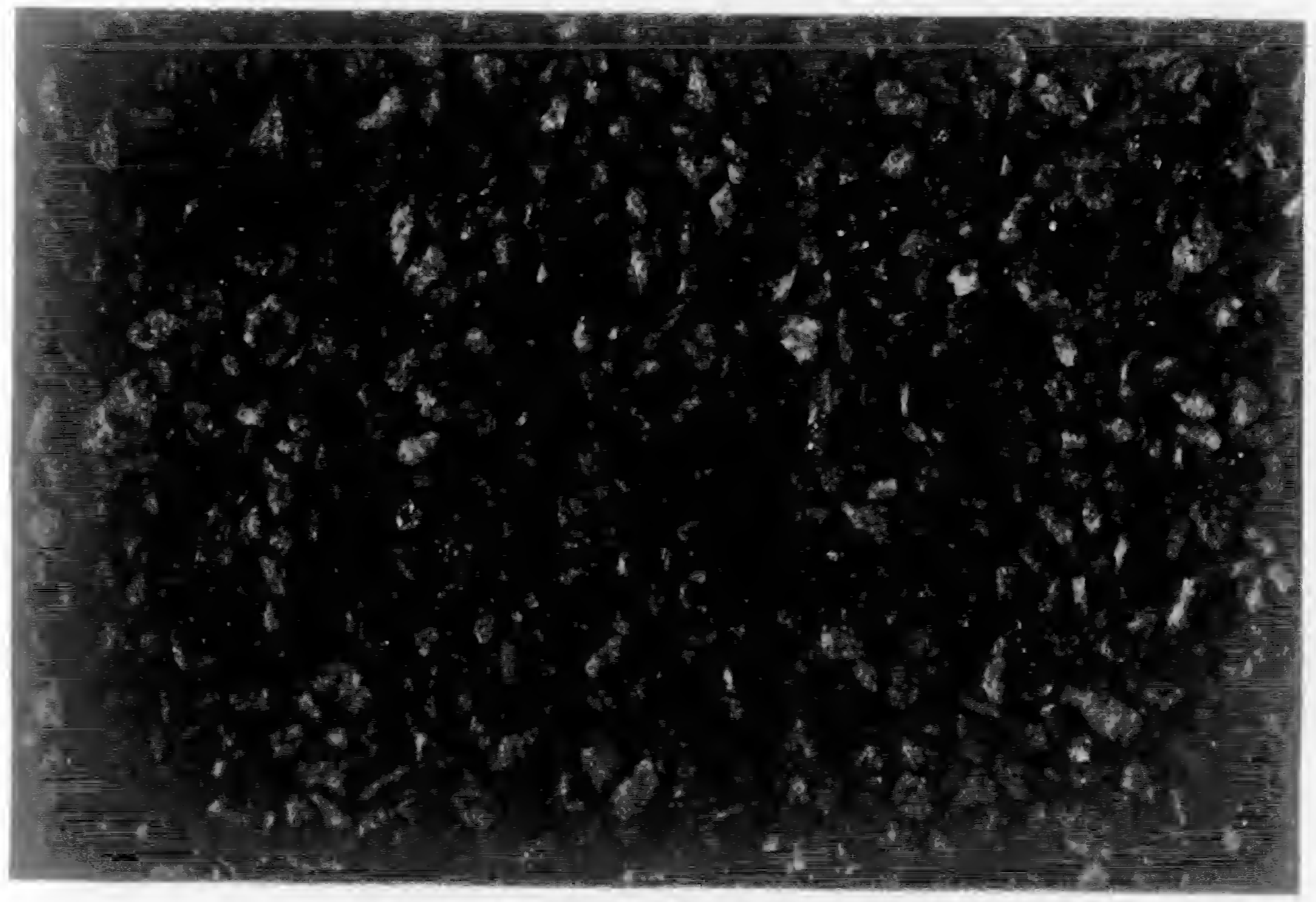


Fig. IV. Granite Grit Concrete Composed of 1 Part Cement 2 Parts Bar Sand and 3 Parts [illegible] Granite Grit. Actual Size

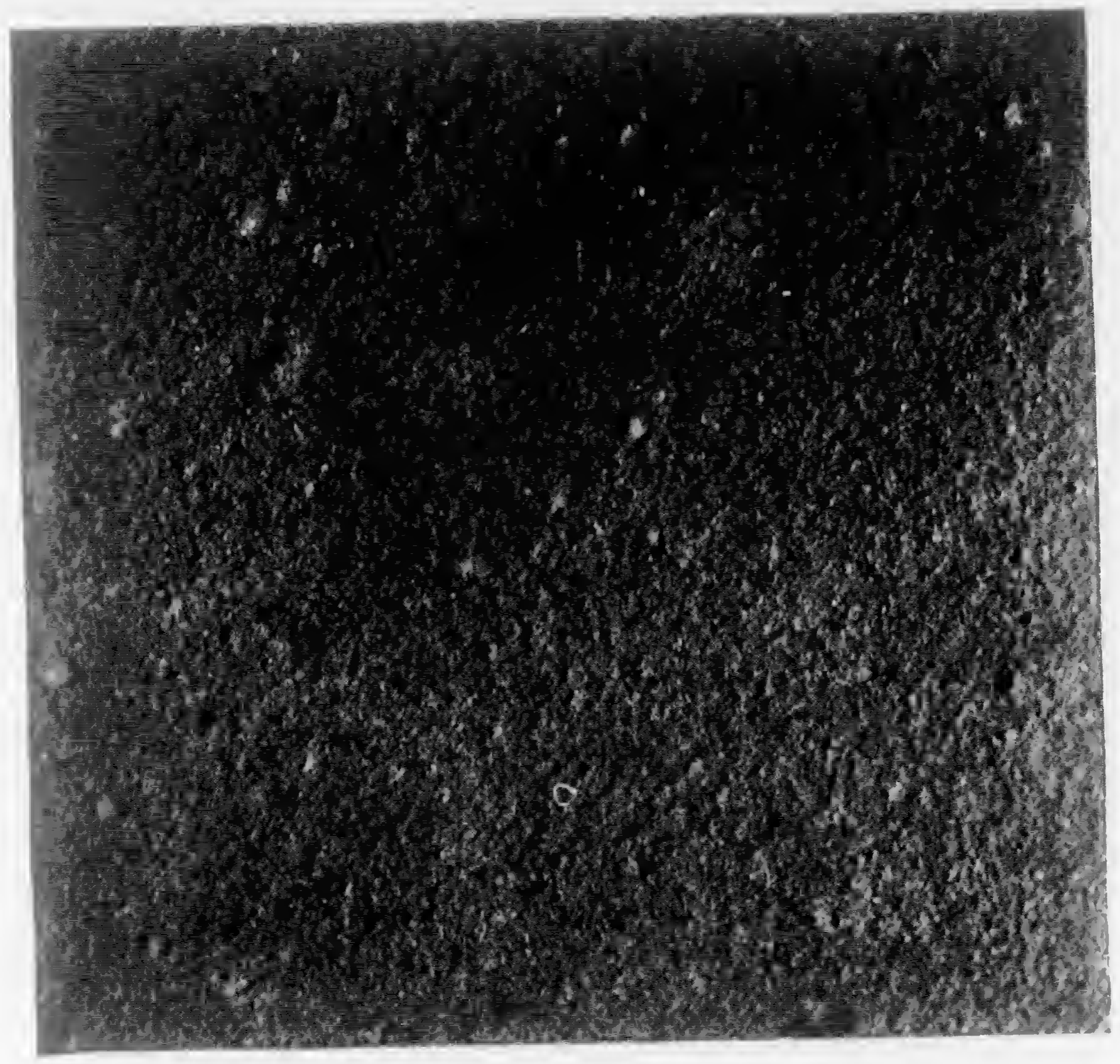


Fig. V. Example of Cement and Sand Mixture Composed of 1 Part Cement and 2 Parts Bar Sand. Actual Size

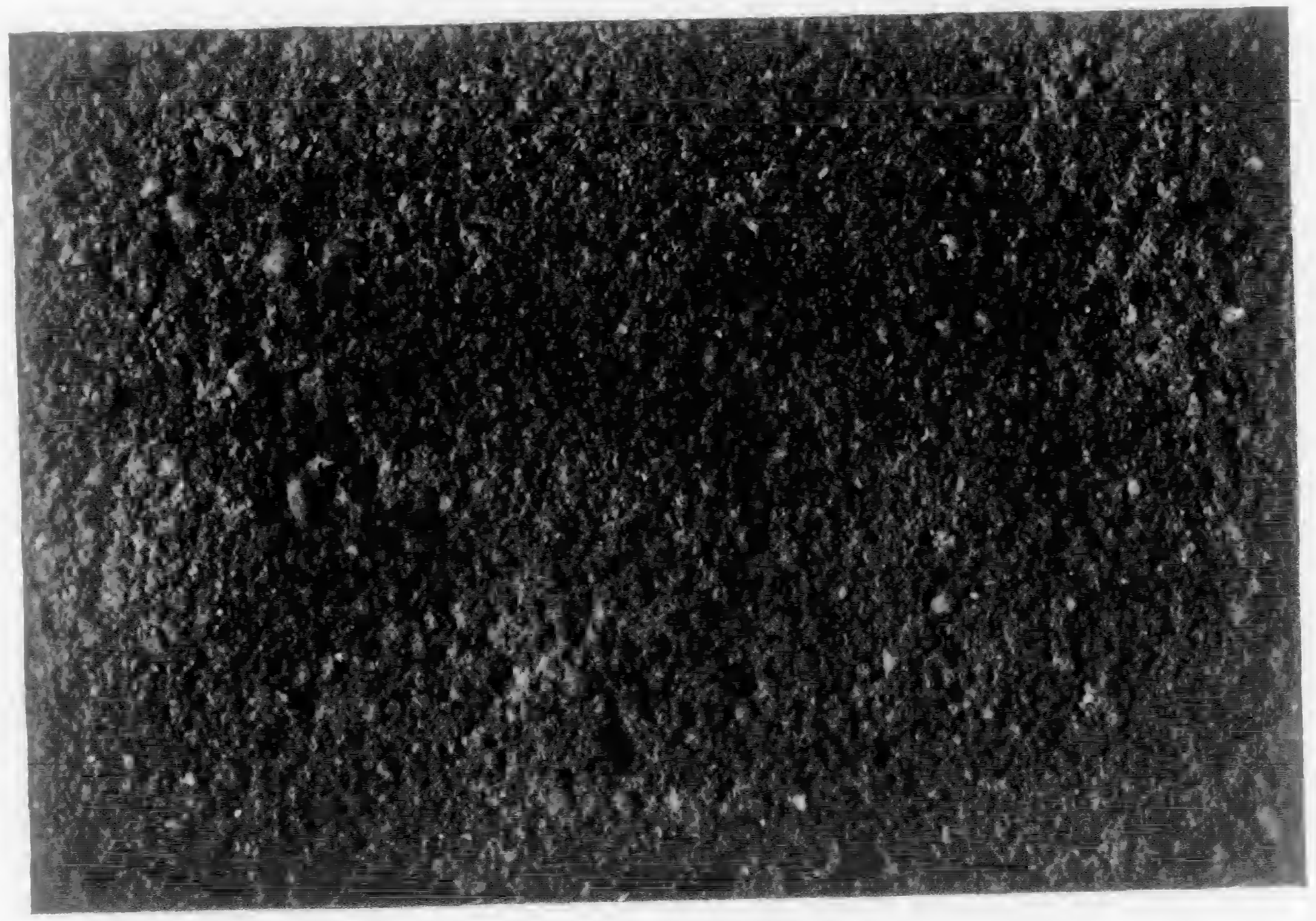


Fig. VI. Yellow Bar Sand and Cement Composed of 1 Part Cement and 3 Parts Yellow Bar Sand. Actual Size

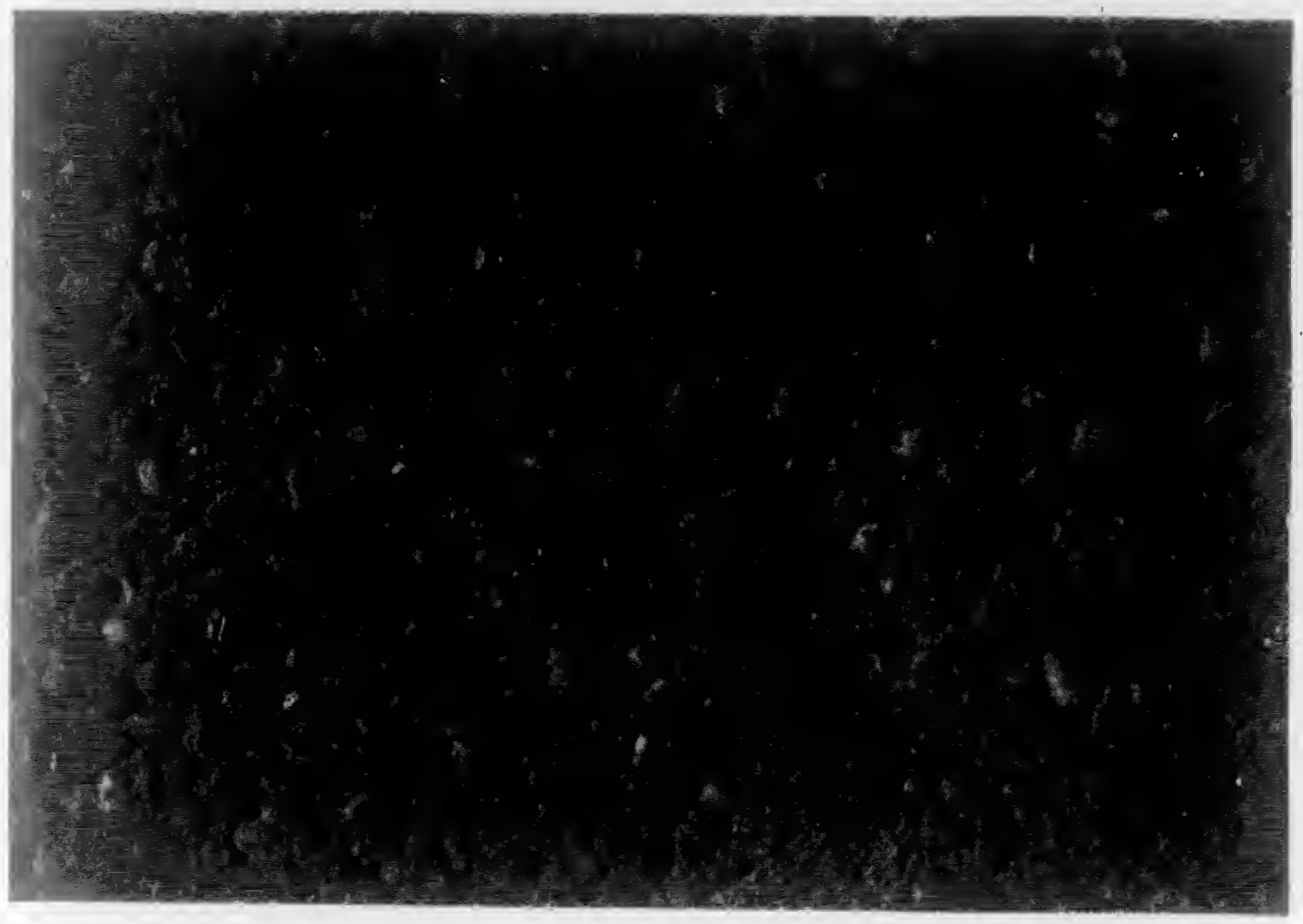


Fig. III. Sand and Yellow Pebble Concrete Composed of 1 Part Cement, 2 Parts Bar Sand and 3 Parts Screened Yellow Pebbles. Actual Size

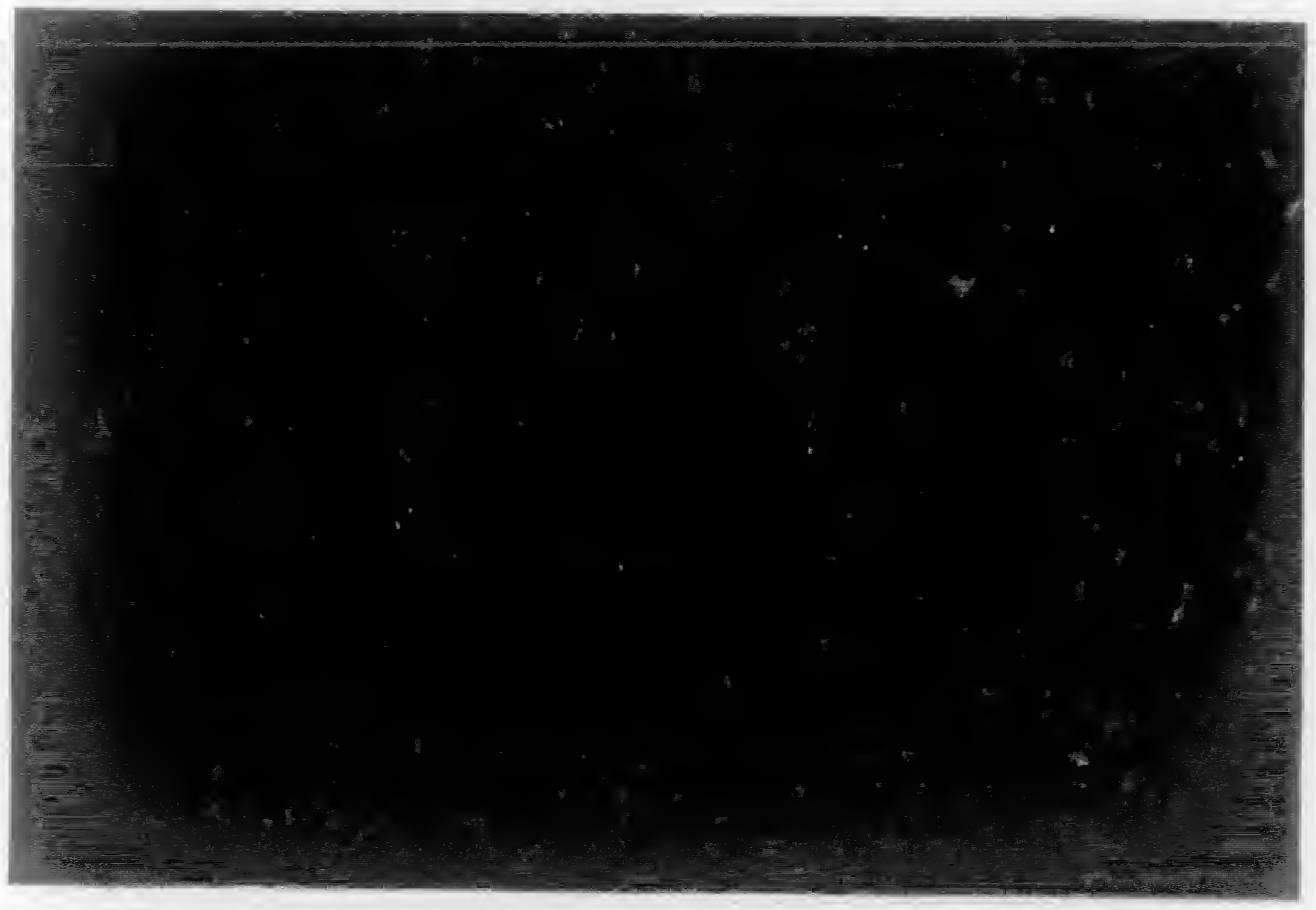


Fig. IV. Granite Grit Concrete Composed of 1 Part Cement, 2 Parts Bar Sand and 3 Parts ¼-Inch Granite Grit. Actual Size

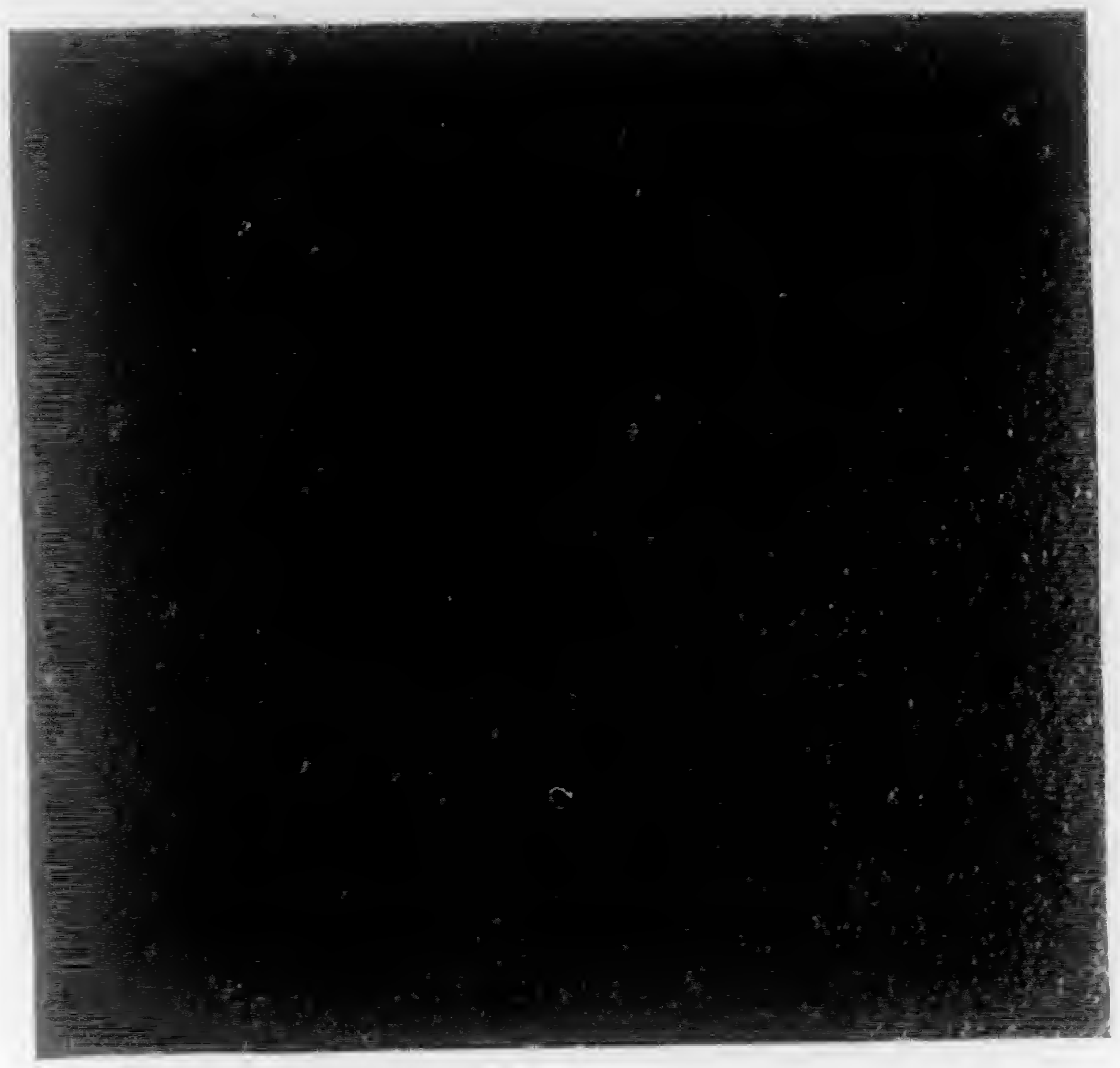


Fig. V. Example of Cement and Sand Mixture Composed of 1 Part Cement and 2 Parts Bar Sand. Actual Size

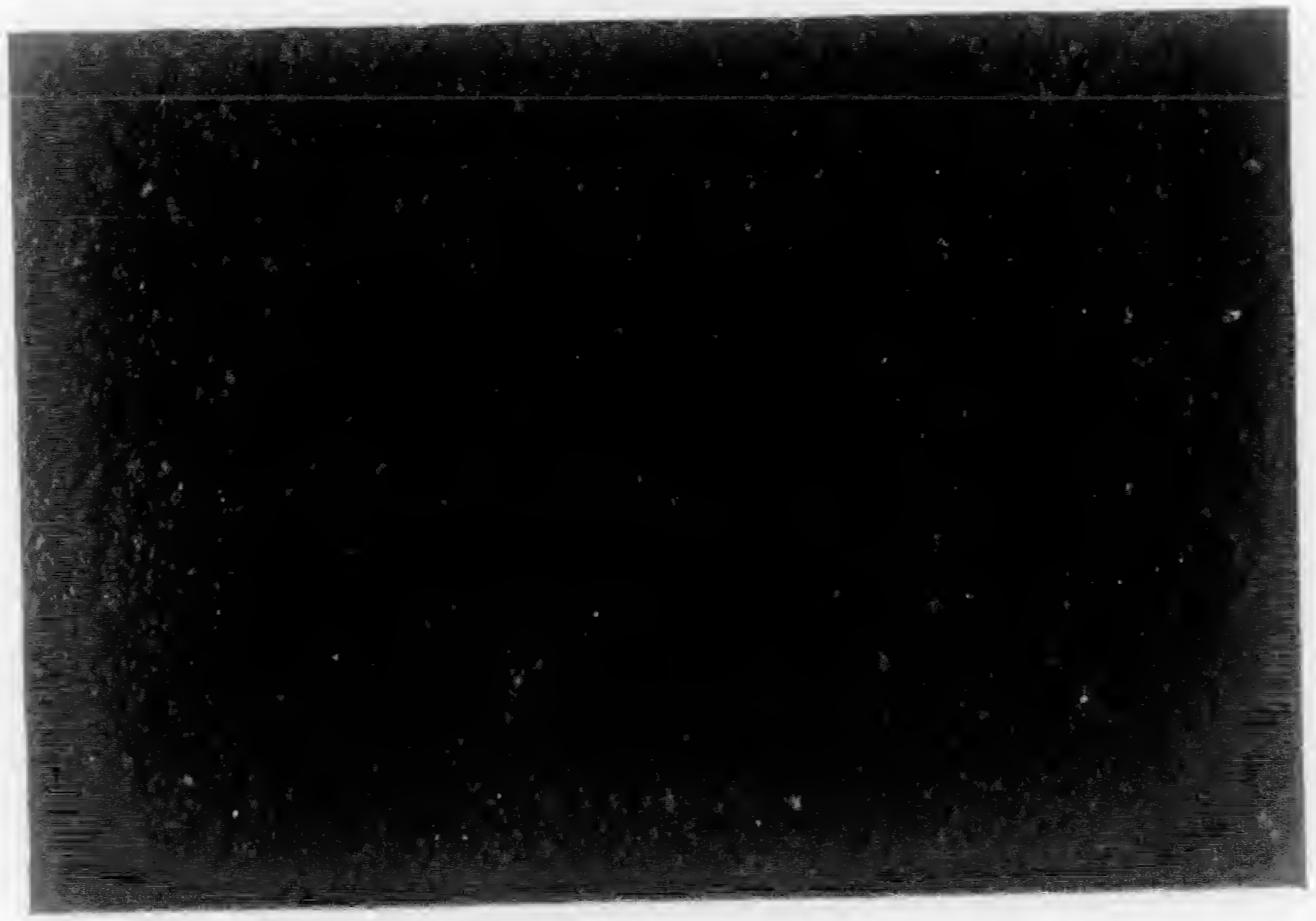


Fig. VI. Yellow Bar Sand and Cement Composed of 1 Part Cement and 3 Parts Yellow Bar Sand Actual Size

Mission Hotel, Santa Rosa
Stone and Smith, Architects

Fireplace in a Los Angeles Bungalow

ticularly in combination with reinforcement. Concrete that is sufficiently hard to sustain more compression than that due to the superimposed weight of a few of its own layers is too hard to wash. In cool weather when crystallization proceeds more slowly, the washing is practicable two or even three days after laying, and in cold weather a whole week has been found not too long to leave it in the forms when a slow-setting cement has been used.

If it should happen that a face has been permitted to become too hard for washing with a brush, the film can be rubbed off with a small block of wood or sandstone with a copious flow of water, but it is, of course, laborious and it cannot well be carried to the point of leaving the particles of aggregate in appreciable relief. The nearest approach to the washed surface is the effect produced by dressing with a sharp bush hammer and then washing with muriatic acid diluted one-half. The acid should be well rinsed off.

If the height of the wall to be thus treated is too great to be completed in one day, face forms must be constructed to facilitate the removal of the planking without disturbing the studs or uprights. This is easily accomplished by setting the studs 8 inches to 12 inches away from the fact line and supporting the planks with cleats—say 2 inches by 1 inch—tacked to the studs and the planks. This permits the lower planks to be removed and the washing done while the upper planks are in place and concrete being deposited. With the exercise of very watchful care on the part of the workmen and unremitting inspection two different days' work can be joined so that after washing, the joint will not be unsightly—even scarcely distinguishable, but such work is usually not obtainable throughout a structure, and it is found very easy to obtain thoroughly satisfactory joints by indenting horizontal grooves at regular intervals representing courses, and finishing each day's work at the apex of a groove. These indentations are made by means of triangular beads on the face forms. Usually the bead is the beveled edge of a strip set between the face planks and lightly secured to the planks with partly driven toe nails so that, if desired, a plank can be removed independently of the bead above it, the bead remaining to set the plank upon for the next course. These grooves in the face of a wall improve the appearance by relieving the blankness of a large area. It is found practicable to prosecute the work with one course of planks where the capacity of the plant for one day is equal to only one course of concrete. In this way the same planks have been used for many different courses on four or more different structures.

The cost of washing depends upon the degree of hardness attained by the face. If it be taken at the right time three or four passages of an ordinary house scrubbing brush with a free flow of water from a hose or sponge will be all that is required, and a laborer should wash say one hundred square feet in an hour if the work is conveniently accessible. With a harder surface, such as it is likely to have within twenty-four hours in summer, scraping with a wire brush first will accelerate the washing which may then require from two to five hours for one hundred square feet. Bush hammering will cost probably from five to ten cents per square foot according to the quantity and the outfit.

This wash method of finishing has been in use for about three years, and the surfaces are quite as pleasing after the lapse of time as when fresh. As yet no hair or surface cracks have been found in any work that was washed, which is doubtless accounted for by the fact that the only material in which such cracks can develop is removed by the process.

A material advantage in the use of forms that are removable while the concrete is green, is found in the opportunity for repairing blemishes. Incidental voids can be filled with the same material and bulges can be rubbed off because of its freshness without impairing the finish.

The accompanying illustrations are from photographs of specimens of various mixtures. The round baluster which is a left-over from a bridge is composed of 1 cement, 2 unscreened yellow bank sand and 3 cleaned 1-4 inch crushed dark stone. The square baluster, also a left-over—is composed of 1 cement and 3 uncleaned 1-4-inch crushed dark stone, the stone dust forming the sand portion. The mixture was used for the whole body of the baluster in each case, iron molds being used, and the washing done within twenty-four hours. The six cuts representing different mixtures as labeled show the actual size of the original.

It is very important to direct the reader's attention to the fact in all of the concrete surfaces shown herewith the coarse aggregate projects in low relief. It may appear to one person in proper form while to another it may seem sunken or intaglio, as though the surface had formerly been incrusted with pebbles and sand, which had washed away. This is a curious optical illusion governed by the position of the light as it falls upon the page. If what are really crushed particles of stone or gravel in relief should appear as depressions, turn the picture upside down or in proper position to get the true impression.

* * *

Structural Association and Its Affiliations Terminate

THE following is a copy of a circular letter sent out by the Structural Association of San Francisco:

"At the regular Association Meeting of December 20, 1906, it was voted to adopt in full the Report and Recommendations of the Committee previously appointed to outline the program for bringing the Association's work and life to a dignified ending.

"The report reads as follows: 1. That public meetings be discontinued after the meeting of December 20th, 1906, except at the call of the President; 2. That the weekly publication of the Association be discontinued after the last December issue; 3. That dues for the first six months of 1907 be $3.00, during which six months it is contemplated that all reports will be submitted, edited, and published in permanent form, and the Association's work as originally outlined, practically completed.

"These moneys, for 1907 dues, are needed for the clerical expenses, incident to a preliminary editing of the final Reports; and the Executive Committee trusts it will receive the complete support of all members.

"For the Association, C. DERLETH, Jr., Secretary."

* * *

Tit For Tat

A plumber who was sent to the house of a wealthy stock broker to make repairs was taken by the butler into the dining room, and was beginning his work when the lady of the house entered.

"John," said she, with a suspicious glance toward the plumber, "remove the silver from the sideboard at once and lock it up."

But the man of lead was in nowise disconcerted. "Tom," said he to his assistant who accompanied him, "take my watch and chain and these few coppers home to my missus at once."

The Architect's Relation to Concrete Construction

By JENS C. PETERSON, Architect, in Concrete.

IN an article in the October issue of Concrete on the question of the architect's relation to the use of reinforced concrete, some points are brought out that might have more light.

It seems from the writer's point of view that Mr. Brayton, a civil engineer, who has written articles in a recent issue of the Architect and Engineer of California, fears that the increasing force and power of concrete construction concerns is going to brush aside the general concrete architect and make his consultation and authority on items of strength and proportions uncalled for or unnecessary to them.

Mr. Brayton seems to contend that a standard method of reinforcement should be adopted in such a form that the architect, engineer or contractor is made entirely independent of any patented systems, and at the same time a standard should be arranged so that where it is shown to be profitable a patented section could be substituted for the standard reinforcement drawn in the plans of the designer.

The writer, with other architects who are interested in reinforced concrete construction and cement buildings in general, has found that so far no general standard styles have been adopted by the profession, but a scale sectional drawing has usually been made by the architect or designer, similar to those generally made for terra-cotta work, and terra-cotta sections.

If the architect does not care to discriminate between certain methods of reinforcing, he can specify the floor or column loads that will be imposed. This will leave the matter open for competing contracting and engineering firms, but would not necessarily instigate a free for all "scrap" as to who can do the work for the least money; but each firm from its own data and files can figure at what price it wishes to undertake to do the work under imposed conditions.

The architect will generally be consulted at the time a decision is made awarding the contracts or work (if same is done on the "cost plus a percentage" basis, or a "cost plus a fixed sum" basis, or by a direct contract), and should know from familiarity with or knowledge of each different style of reinforcement which one would be best for his clients, building in conjunction with the prices named, just as he would do in selecting a pressed brick, a tile-facing or other building material.

No one has heard an architect say anything for or against any certain kind of built-up steel column, though some of these are patented. Why should he discriminate against any one of the good forms of reinforcement?

The architect is not the agent of the contractor, but of the owner, just as he always has been. It does not signify that because certain large concerns are "designing and building," the architect is to be in any way handicapped or that his progress along similar lines of construction is impeded. He should be in a position to judge of the merits of all kinds of reinforcement without discrimination or partiality, and select for his client that kind which would best meet his certain requirements.

This is a progressive day; larger and better buildings are being built now than ever before. The systematizing of the handling of manufactured products and the changing of manufacturing plants to facilitate their work, cause owners to destroy the buildings that were built yesterday and rebuild them today in order to get a better relation between the departments of their works. Hence they must rebuild quickly and economically. Concrete seems to be the material to meet these requirements, and with careful and conservative building it will meet every demand.

The architect is not being crowded out of his old-time prestige by the engineering concerns who design and build of concrete. He can and should get out his drawings and designs to suit his own ideas and tastes and surrounding conditions, together with those of his clients. He should study to make them artistic and harmonious, keeping in mind, if he will, the unlimited possibilities of concrete construction, since with reinforcement it may be said that it has no limitations. When the drawings are well under way, he may call in the engineer and the specialist, just as he does in the planning of brick and steel building frames and in terra-cotta covered buildings.

How many architects today execute anything more than the elevation drawings of terra-cotta trimmings, etc.? How many know how much it shrinks in burning or exactly how much a certain section will carry under all conditions? These matters are left to the manufacturing engineer, who executes his patterns and molds to conform to the designs laid down by the architect. The architect knows of course how those materials must be anchored and broken into sections and also about what he can do with them. The architects and engineers are both specialists; each should conduct his own specialty.

Some of us remember the "radical" ideas brought out when the first steel-framed building was built on La Salle street, Chicago. Yet this class of building endured. None the less "radical," in the opinion of some of our architects today, is the idea of a sixteen-story reinforced concrete building.

The increasing capacity of big contracting concerns who build in concrete is due to the fact that they see the possibility of the uses of cement and steel, and are grasping them.

* * *

Comparison of Cost of Concrete and Stone Masonry

THE cost of concrete and stone masonry varies largely with the local conditions and the character of the work on which they are used, says the Scientific American, but there are very few places where concrete masonry is not only cheaper than stone masonry, but better, being much stronger and more suitable in many ways. This fact is becoming more generally recognized, and more than one quarry which in former years produced building stone is now producing crushed stone for concrete. The following figures give a general idea of the comparative cost of brick masonry and concrete per cubic yard:

Brick:	
500 brick	$3.75
¾ bbl. cement	1.50
¼ load sand	.50
Labor	2.25
Making a total	$8.00
Concrete:	
1 bbl. Alpha cement	$2.00
¼ load sand	.50
Broken stone	1.50
Labor and forms	1.50
Making a total	$5.50

From the above it will be seen that on this basis there is a decided advantage in favor of concrete.

Buildings Cast of Concrete

DESCRIBING his plan to mold whole houses in a single casting out of solid concrete, which will provide homes for workingmen at a cost of $500 or less, Thomas A. Edison, the wizard inventor, says:

"The first step will be to employ an architect to design, say, a dozen dwelling houses of different patterns. I purpose to have metallic molds made to correspond. The mold for each house will be made in detachable parts. There will be separate plates and small molds, that can be screwed together easily to form one mold for an entire house. That a fine finish may be obtained, the inside surfaces of the parts will be nickel-plated.

"After the mold for the whole house is set up it will be a simple matter to pump the concrete into every nook and cranny. After four days the parts of the mold will be unscrewed and taken off and the solid concrete house will remain."

Edison says the plan will be carried out in such detail that dormer windows, chimneys, spouts, and ornamental designs will be molded with the whole, and that inside cupboards, fireplaces, stairways with ornamental banisters, mantel pieces, and even bath tubs will be formed in the cast in which the house proper will be made.

The house will be so complete that when the mold is removed the installation of electric wires, window sashes, etc., will be all that will be necessary before the furnishers and carpet layers may go to work. Even the plumbing and gas piping will be of concrete and molded in the original cast.

As a practical demonstration of what may be accomplished by the process Edison has built a complete chicken house in his back yard, molded in one solid piece of concrete. It has many compartments, and doorways and decorated cornices of intricate design.

The original cost of each mold, with all its component parts, the inventor estimates at $25,000. From each mold, however, he says an unlimited number of houses may be produced. Because the parts of the mold are to be detachable it will be portable and one mold may be sent with little difficulty from town to town. About ninety houses could be built in one year by the use of a single mold, at a cost of from $500 to $600 apiece.

* * *

Concrete Will Not Supersede Steel

BUILDINGS should not be constructed of reinforced concrete throughout. Such is the verdict of a well-known member of the American Society of Civil Engineers, who has just published a book dealing with the San Francisco fire. The writer made a thorough investigation of more than eighty buildings in the burned district, and has come to the conclusion that the protected steel frame type of construction is superior to all others in fire-resisting qualities. That there is great doubt about the ability of reinforced concrete buildings to withstand the severe heat of a conflagration is shown by the following paragraph in the current issue of a leading engineering weekly:

"Are these buildings an engineering mistake? Are the engineers and architects and contractors who are putting them up, building wisely and safely for themselves and for the owners; or may they look back some day and be filled with sorrow and regret because of the destruction of life and property?

"Light has just been thrown upon this question by tests of reinforced concrete columns recently conducted in Chicago, and witnessed by many well-known engineers and experts of the Chicago building department. The tests were conducted with a number of columns made from concrete mixed according to standard specifications. Each of the columns was subjected for three hours to a temperature averaging 1600 degrees F. At the end of that time, under load tests, it was found that the columns had lost more than 70 per cent of their original strength.

"Various lengths which had been cut from the columns before they were tested were covered with three inches of porous terra cotta and subjected to identically the same heat and load tests. Upon examination the columns were found to be in perfect condition, not having lost any of their original strength."

These tests prove that unprotected concrete columns are no more fireproof than steel, and that if they are to withstand fire they must be protected with hollow tile in the same way that the steel beams and girders in our big sky-scrapers are now protected.

What will happen when fire attacks buildings in which concrete columns are left unprotected from heat is yet to be seen. There is no such doubt in regard to buildings of the protected steel and hollow tile type.—The Western Architect and Builder.

* * *

Why We Should Urge an Increased Use of Brick

THE common building brick industry stands in need of seed-sowing service. As the great common people are the base of all industrial life, so the common building brick is the backbone of the clay industry. The use of common brick is increasing right along, but not in proportion to its merits as a building material. Brickmakers should lose no opportunity of bringing the merits of brick to the attention of builders. Not only is the time ripe for seed sowing, but the ground is in excellent condition for cultivation. Our forest wealth is disappearing to an extent that ere long all available timber will be needed for cabinet work and special uses outside of structural work, and some other building material must take its place. If this fact is brought to the attention of builders, they will turn a willing ear to those who advocate a more lasting material. It is natural for people to want to build better homes and to build them of material that will withstand the ravages of time and stand as a monument to the builder long after he has himself turned to clay. This is a worthy pride, this pride of permanent home building, and should be encouraged in every possible way, not alone because it means material profit to the brickmaker, but because it will help mankind in general by encouraging the use of the best building material on earth. To build better is to think better and to live better.—The Clay Worker.

* * *

A New Wall Material

M. A. Waller, of Vienna, Austria, says it is only a matter of time when tile and steel now used in decorating and covering interior walls of stores and dwellings, will be replaced by a new material recently put on the market in Europe. It is called metloid and is already extensively used in European construction. The material is adjusted with a certain glue. Much more elaborate decorations are said to be obtained by the use of this material, which looks and weighs much like tin. It is less costly than tile or steel and can be washed and scrubbed with no injurious effect.

Fire Protection

The Red Monster

By F. W. FITZPATRICK

The International Society of Building Commissioners, of which Mr. Fitzpatrick is executive officer, is meeting with some success in having cities consider the re-vamping of their tax systems. As things are now, the more money a man puts into a building, the more precautions he takes against fire, for instance, the more is he taxed by the municipality. It is suggested that a more persuasive means should be employed by communities to get people into the notion of building better by graduating the taxes on property according to that property's safety or danger; that the man with a fireproof building should pay a less pro rata tax than the one owning a fire-trap. Such an arrangement of taxes would be equitable to all. It would put the burden of maintenance of fire departments upon those who needed the service, and would relieve those of that tax who are public-spirited and businesslike enough to build so as to not require such services. It is the one sane solution of the problem, and all right-minded men should join in the effort to bring about this much-needed reform in taxation.

NERO destroyed Rome to amuse himself, a little pastime that cost that nation many millions of its golden coins; French and other revolutionaries burned many cities; the Russians fired Moscow merely to cause that other devastator, Napoleon, some inconvenience, and in more recent wars whole cities have likewise been destroyed for strategic or other alleged reasons, but in our day and environment all our great conflagrations have been attributed to Accident. Erroneously, however; for the real culprit's name is STUPIDITY.

Strange though it may seem our people have only begun to suspect him; like many of our institutions he is being investigated and there is some talk of indicting him, but alas and alack, there is scant hope of a speedy trial and still less probability of his being put away where he can do no further harm.

In the times of our fathers, the pioneers, it was economy to build of wood. That created a precedent. And so people got into other habits of construction then and in times immediately following, habits that have stuck to them most tenaciously since, though the necessity or excuse for doing things in that or those particular ways disappeared years ago.

To build of wood today, and particularly in congested districts, and to do much else in our buildings that we do do, things that insure rapidity of combustion, that endanger life, that make destruction of property certain is no longer economical, but on the contrary is foolishly extravagant and positively criminal. At law ignorance is no excuse, but in this case it would seem that the most that could be laid against the people is that they are more or less innocent accessories before and after the fact. The architects are the most to blame for the fact that the people have remained in the rut of poor building. Indeed is not the profession chiefly to blame for nearly all the sins of bad building, insufficient building laws, resultant fires and our troubles and losses in that line generally?

Some people have recognized the condition, and frantic efforts are made to effect a cure. Most of them have been applying remedies, giving medicines after the trouble has started; few have thought of eliminating the disease or at least preventing its dissemination. Every effort has been made to put water on fire, to drown it, after it has started; few have ever even thought of cutting the fire damage down by giving it *less fuel* to burn.

Things have gotten to such a pass, however, that even if we should be sane enough to add nothing more that can burn there is already so very much fuel all about that we must perforce retain all the cures, the costly paraphernalia for fighting fire, in order to cope with the conflagrations that are bound to occur. But is it not the epitome of folly to keep on adding fuel? As the nation has grown in importance and prosperity so has increased its awful tribute to the Red Monster, though there is no more reason for that proportionate increase than there is for a proportionate increase of smallpox or the other pestilential diseases that have well nigh been wiped off the list of our supposedly necessary evils.

The tribute levied upon us by fire has reached an appalling figure, something tremendous, and, mark you, unlike most "losses" that are, after all, mere exchanges of money or values from one man's or set of men's pockets to other pockets, this loss is absolute; all that remains after fire is—smoke! And so far, with all our vaunted inventiveness, no one has been able to turn the latter commodity into any commercial use.

Tabulations may be convincing but certainly are awfully tiresome reading, so let us eschew them. But we can well afford to give a minute's time to a glance at the matter of the cost of fire, merely considering it in its general aspect and in round figures.

We actually have invested at the present moment $14,250,000,000 in the 11,400,000 buildings of which the nation boasts. Russia has 36,000 more buildings than we, but the total value of all her structures is but $3,500,000,000 (United Kingdom, 7,100,000 buildings; France, 9,000,000; Germany, 6,000,000; Holland, 1,000,000) so that we can safely say that we are the greatest builders of the age. Yet of all those millions of our buildings there are barely 4,000 that can lay any claim to being modern, up-to-date, and fire-resisting to the extent that their steel-frame and structural parts can not be over much damaged by fire, though all else about them is just as inflammable and damageable as the flimsiest construction of Slav, Mongolian, or other so-called semi-barbarian. In all this great country of ours there are probably not 20 what can rightfully be called moderately fire-proof buildings, and they are generally warehouses or structures of such character. Of the millions of homes throughout the land, palaces or cottages, there where we house those who are dearest to our hearts and our most valued material possessions, there are but three hundred that would withstand for even a little while against even a moderately hot fire, and there are certainly not over ten that are fire-proof.

Intelligence, progressiveness, leadership, are words we frequently hear applied, aye, that we constantly use in describing ourselves, what application have they to our generally accepted mode of constructing buildings. True we have evolved the "skyscraper," no other people on earth have the conveniences in their homes nor do any other people bring such skill to bear in the

utilization of every inch of space as we do, but at the same time, let not those things make us over-conceited, for we have to acknowledge that nowhere else, not even in China or Japan, the lands of paper houses, is the annual fire loss in bulk or pro rata, anywhere near our own!

And what does this folly of flimsy building cost us? In the first place nearly 7000 lives are annually sacrificed to the god of fire. In property we have offered up over $1,000,000,000 worth in value on that same pyre in six year's time; our annual offering has reached the $200,000,000 mark. But, stay, That is our *normal* yearly loss. Now then, what constitutes a normal year? A period during which there are no extraordinary conflagrations. We have barely recovered from the Baltimore fire. That took up the year's total to $250,000,000. We were told that 1904 was therefore an abnormal year and probably would not have anything equal to it for the next twenty years. But here, just exactly two years later, we are confronted with the San Francisco horror, a fire that has cost over $320,000,000. The year is but half over, yet if nothing else happens, no other great conflagration occurs, the year's losses are bound to aggregate over $500,000,000. Are we not more or less justified in calling these tremendous losses *normal,* and the years when they do not occur *abnormal?* True, the San Francisco fire was primarily caused by an earthquake, but the actual earthquake damage scarcely reached $10,000,000 of the enormous total we have just noted, and, earthquake or no earthquake, had San Francisco buildings been better built, had they offered less fuel for consumption there would certainly have been less to burn and therefore less total damage. But even in so-called normal years our average has reached three theaters, three public halls, twelve churches, ten schools, two hospitals, two asylums, two colleges, six apartment houses, three department stores, two jails, twenty-six hotels, one hundred and forty flat buildings and sixteen hundred homes burned every week. New York averages 8700 fires a year, Chicago 4100 and every day in the year there are 36,000 lives directly endangered by fire.

All on account of poor building!

We have built so wisely that 1,000,000 buildings have been destroyed by fire during the past ten years. What a commentary upon the intelligence of our architects!

Small wonder that we have to exhibit such wonderful activity in building as we do. Why, in New York alone there will be over $200,000,000 worth of construction this year, and in the entire country probably $750,000,000 will be spent in buildings during the year 1906. But what think you of the people, whatever its activity in the building line, that tolerates conditions that insure that there will be utterly wasted, destroyed, lost, in one year's time buildings equal to five-sevenths of the *entire* year's product?

Then there is the costly paraphernalia we have to maintain to fight fire. In salaries alone we pay over $125,000,000 for our departments; then special water supplies, apparatus and all that sort of thing easily eat up another $200,000,000. And last but not least is the tribute we pay to the gentlemen who condescend to gamble with us on the fire question, the insurance companies.

We have paid them in premiums $1,610,885,242 in ten years. True, they indemnify us for our losses to a certain extent, it is a case where we win sometimes, but as in all gambling operations "the house" gets and keeps the major share of what money comes within its door. For instance, last year, throughout the country we paid in premiums $196,352,374, and got back from the companies in paid losses $95,272,488. But in years like this their gamble is not so productive, it is a case where the bank gets broken. Some of the smaller fry simply close up and get out of business, others quibble and litigate, some pay up every dollar and try to look pleasant, and still others will try to effect compromises, but rest assured it will be many a long year before the San Franciscans will have gotten all that is coming to them rightfully from the insurance companies.

Positively the only redress a sensible man has is to so build that he need carry no insurance with the companies, that his building be as nearly absolutely fireproof as possible, and that the only loss that can occur is from fire in the contents of some one unit of space in his building, an insignificant loss at best and one that he can insure himself. Such a building is possible, not prohibitive in first cost, indeed actually an economy ultimately and a very decided advantage to the individual and the community.

Of late the companies seem to have awakened to the realization that their own welfare really lies in the direction of better building, and they are offering some advantages and a lot of advice in that direction. But the greatest help can only be derived from people's own intelligence individually and collectively. Individually, they must see that such losses as we submit to these days spell, in spite of our great prosperity and seemingly inexhaustible resources, ultimate bankruptcy; collectively, communities must realize that the fire drain is intolerable and having come to that realization, it is only another step to an intelligent re-adjustment of taxation that, more than anything else, will bring about the much to be desired corrections in our mode of construction. Let our tax be adjusted against improved property on a sliding scale; let there be a certain standard of construction established; upon all buildings being built or in existence that are below that standard let there be assessed an increased rate, for it is on their account that costly fire departments and other municipal expenses are incurred, and let there be a decreased rate of tax levied upon buildings that are above that standard of construction, they require the minimum of protection and their owners should benefit accordingly. An equitable, sane and encouraging system of taxation.

The next question naturally propounded will undoubtedly be "What is a fireproof building?" The answer, strange as it may seem, will be to point to San Francisco: that of all places, would seem to be the one least qualified to aid us in our search. In that city of fire-traps there were perhaps fifty buildings, the newer and larger ones in which any attempt was made to minimize the ravages of fire. Think of it! fifty buildings, in which some little thing was done toward fireproofing, in all that great burned district of nearly eight square miles, 700 city blocks, probably 18,000 buildings. In 30 of that 50 the steel skeleton was protected with fireproof clay tiles or some one of the substitute concrete systems. Generally speaking throughout the country as well as in San Francisco, the moment a man makes that provision against fire, protects his steel work thus with tile and builds his floor and partition construction likewise of tile or of a substitute system of concrete he deems his building "fireproof," advertises it as such and people occupy it in that belief. All else about the building is as inflammable as the veriest tinder box, his interior finish, his doors, his windows, every thing that can possibly be so is of wood, and the result is that sooner or later his building in all save the actual structural steel and tile is more or less seriously damaged by fire and the term "fireproof" rceeives an additional black eye and people swear there is no such thing.

* * *

"Say, Dick, what is this new fad they call phonetic spelling?" "It's the kind Jim, they used to flog you and me at school for using."—Baltimore American.

Terra Cotta and Brick

A Brick

By FRANK HONEYWELL.

"That man's a brick."—A thing of clay I see,
Baked to an adamant consistency,
Digged from the earth and worked and in its mold
Crowded and pressed and dried and burned and sold.
But now the human brick an honor gains
Unbounded by six geometric planes:
The common brick is laid into a wall,
Sealed by its mortar firm against a fall;
The brick that walks and sees and breathes, howe'er,
Blessed with an intellect with love awake,
Brave in forgetfulness of self, with care
Seeks to work blessings for humanity's sake.
The human brick, when honor's walls are broke and swayed,
Leaps into place and sticks without the mortar's aid.

—Exchange.

* * *

Advantage of Brick Buildings Over Others

IN a recent interview a well-known Kansas City contractor gave out the following brick information:

"By employing actual figures a better comparison may be obtained. Let us assume a house to be 30x40, with basement, first-floor and second-floor heights 8 feet, 9 feet 6 inches and 9 feet, respectively. For a comparison only the finished exterior walls, including interior plastering of same, will be taken into consideration, as the interior finish will remain the same in all cases.

"First—The frame structure, with three coats of paint, will amount to $2435.

"Second—A frame construction with pressed brick veneering, at $20 per thousand, will cost about $248 more than the frame.

"Third—A pressed-brick veneering, at $20 per thousand, with tile backing, will cost about $263 more than the frame structure or $35 more than the frame construction with brick veneer.

"Fourth—The solid brick wall with pressed-brick facing, at $20 per thousand, will cost about $363 more than the frame structure, or $115 more than the frame construction with brick veneer, and $80 more than brick with tile backing.

"The material used for division walls or partitions should receive as careful attention as the outer walls. A frame partition lacks the quality of being fireproof, but is the one most commonly used because of its cheapness, being but 11 cents per square foot. A brick partition is not very desirable because it requires an unusually heavy wall, which cannot rest on the floor unless it is supported by a firm foundation. This must either be solid walls or intermediate supports, thereby incurring an additional expense. Such a partition, exclusive of its supports, costs 20 cents per square foot. Tile partition is the cheapest as regards the cost of material, but as additional provisions are required for carrying its load, the cost may be considered as being the same as a frame partition. The brick partition will be excluded as being undesirable, therefore the choice will be limited to either the frame or tile partition. The fact of the tile partition possessing the quality of being deafening, fireproof and durable makes it the one which is more worthy our choice.

"Now, having established our comparisons between a frame and brick structure as to actual cost (a difference of $363 on a $4000 house complete), it will be seen the former is slightly favored. In ten years' time the difference in cost which exists between the frame and brick structure will be entirely eliminated and the cost of both will have been the same, as the repairs, painting and insurance considered will almost amount to the difference. The repairs and painting will alone be about $40 per year after the first three years, and the insurance has a higher premium on combustible structures.

"The appearace which a brick house presents at the end of a long number of years is most gratifying, standing as erect and perfect as the day of its erection, having caused the owner at no time the trouble and expense a frame house would have made. He who foresaw all this at the beginning will appreciate and realize to what extent his broad intellect and clear insight as to the future resulted in."

* * *

Statistics of Clay Working Industries

THE report issued by the United States Geological Survey, containing statistics of the clay-working industries in the United States for 1905, shows a substantial increase in the manufacture and value of these products.

The common brick industry, the most widespread of all the clay-working industries, makes up a little over half of the brick and tile value, and 41 per cent of all clay products. The number of common brick increased from 8,665,171,000 in 1904 to 9,817,355,000 in 1905. New York continues to be by far the largest producer of common brick, reporting over one and one-half billions, valued at $10,297,214. The next largest producer of common brick is Illinois, which marketed 1,125,024,000 in 1905. The only other state producing over a billion common brick was Pennsylvania.

The greatest per cent of increase in all clay products is that of front brick, the production of which jumped from 334,351,000 in 1904 to 541,590,000 in 1905, a gain of 24.69 per cent. The average price was raised, too, increasing the gain in value to 27.84 per cent. Pennsylvania was the leading state in this product, and the average price in that state was $12.81. The next largest producer was Ohio, with an average price of $12.01. New Jersey was third in quantity, but beat the leading states in average price, the price there being $15.86. Illinois, which came fourth, only realized an average of $11.44 for her front brick. On account of this the value of the Illinois product was exceeded by Missouri and by Virginia. The percentage of front brick in relation to the total of brick and tile products was raised a little, it now being 5.84 per cent, or 4.75 per cent of all clay products. In 1904 these percentages were 5.25 and 4.24.

Architectural terra cotta showed an increase during the year of nearly a million dollars, or 21.81 per cent, and is now 4.11 per cent of the brick and tile products. This industry is more concentrated than any other, that is, there are fewer of them in any given state. In fact, the reports say that only four states show more than three industries. New Jersey is the leading state and furnishes nearly one-third of the entire amount. New York has second place, Pennsylvania third.

* * *

About Sand-lime Brick

MANY handsome buildings have been put up with sand-lime brick the past year, and the volume of actual construction will probably be at least ten times that of the preceding year, or to state it differently, 10,000 bricks have been sold in 1906 for every 1000 that were sold in 1905. This represents an enormous expansion, and the difference in the testimony as seen by Rock Products can be stated thus:

One year ago, nearly every manufacturer seemed to have something to complain of, either in the way of equipment or in the quality of materials that he was using in the manufacture of his brick, while in the present season, they are only willing to say, "We are busy making and selling all the brick we can produce."

The manufacturers of sand-lime brick seem to be shy of publicity, or unwilling to tell all they know about the industry, probably fearing some one else will get rich on what they know, or have discovered in the course of their operations. This might have been a good idea in the Dark Ages when feudal barons preyed upon their neighbors, but it is not up-to-date and it won't go in 1906. If there is any reader who thinks he knows it all, we must pleasantly invite him to take another guess.

Sand-lime brick is being manufactured profitably at a large number of the plants now in operation. The machinery manufacturers have solved many of the riddles which at first seemed to offer insurmountable difficulties, and there have been many good lessons learned which will never again be encountered.

No better building material was ever manufactured than the sand-lime brick, and when the plant is located right, with regard to the supply of the proper kind of sand and equipped by one of several good systems of machinery, there is no reason why, with ordinary intelligence, that a satisfactory profit shall not be collected for the money invested. It is so, because the brick can be sold at a good price in almost any market.

In a recent issue of Rock Products there was published a query asking how sand-lime brick stands in a wall that is built in a wet place, using the sand-lime brick for foundation. In answer to this Mr. O. M. Tupper, of Antioch, Cal., says:

"We built a 17-inch wall, 20 feet high, to hold back a bank of sand, about three years ago. The roof of our factory rests on this wall and all rain water from the roof 60x24 feet runs on this sand. The pressure against the wall is great and is wet about one-third of the time. No water seeps through the wall. The recent earthquake shook this wall down and upon testing some of the brick we found they stood a crushing stress of 4200 pounds a square inch. I would say that sand-lime brick improve every year that they come in contact with water. The town of Antioch, Cal., where our works are located, have used our brick exclusively for foundations."

* * *

The National Association of Paving Brick Manufacturers will meet at St. Louis, Mo., February 5th and 6th, 1907.

Paints, Oils, Varnish

The Ready Mixed Paint Question

By H. T. JAMES

FEW people not directly interested in the manufacture appreciate the development and magnitude of the Ready Mixed Paint business of the present day.

The Paint Grinders' Association of the United States calculates that over 100,000,000 gallons are consumed yearly, of which one-half is used in the painting of houses.

Many brands are sold and guarantees given that are absolutely worthless, and naturally the result of this creates a prejudice against ready mixed paint, and the reputable manufacturer suffers.

It has been remarked that the American people consume more paint both in aggregate and per capita than any other people in the world.

The reason for this great consumption is two-fold.

A large proportion of our buildings, especially in small towns, and the rural districts are constructed of wood; and we as a people are given to neatness and cleanliness, and take it all in all there is nothing more sanitary or cleanly than paint.

Everywhere we find the neat, cheerful painted dwelling proclaiming the prosperity and self-respect of the population.

The manufacture of ready mixed paint as a special industry is of comparatively recent date.

Less than a century ago painters ground their dry colors in oil with slabs and mullers. It was the physical impossibility of meeting, in this manner, the demands of a rapidly growing population, and of wooden house builders, that led to the establishment of the ready mixed paint factories.

At first white lead and colors were ground in oil and supplied in paste form to the painters, who combined them with the necessary thinners in the shop.

The second step was the invention of ready mixed paint about the middle of the last century, and popularly called "patent paint."

The development was natural and logical. If white lead ground in oil by machinery, and pigments ground by machinery are better and cheaper than the same materials ground by hand in the paint shop,—why should it not be better and cheaper to leave the whole process of paint making and mixing to the paint factory?

Hence the modern paint factory and the modern ready mixed paint.

The annual consumption of ready mixed paint increased from zero in 1860 to something like 60,000,000 gallons in 1903. In comparison, the increase in consumption of lead in oil during this same period is hardly worth considering.

Some severe things have been said and written about ready mixed paint, especially by painters, and in many instances these strictures have been justified, as some peculiarly constructed mixtures have in the past been worked off on the consumer in the shape of prepared paints, and at the present time there are a number of mixtures being extensively advertised that are, as I said before, worthless.

Mixed paints differ considerably in composition, and yet the results obtained by the use of the higher, or better grade are surprisingly alike.

They are based on a certain percentage of carbonate of lead and oxide of zinc, and with or without inert materials. By inert materials we mean gypsum, barytes, etc. This is the material that the painter is chiefly exercised over, although in the past quantities of it were used in the manufacture of so-called pure white lead, and are being used at the present day.

A properly manufactured ready mixed paint prepared by machinery in a paint factory thoroughly equipped for analysis and testing is far superior to a paint mixed with a paddle in a paint bucket by a painter.

No matter what his skill may be he cannot in this way obtain a uniform mixture.

This fact can be demonstrated at any time by taking a few drops of such a mixture and placing it on a ground glass slab. On rubbing it with a muller, the tint will gradually deepen, proving that the coloring material was not thoroughly incorporated. If the coloring matter which can be distinguished is not evenly distributed, neither are the other ingredients, which we cannot distinguish.

Further than this,—the painter is likely to get adulterated oil, turpentine, and cheap rosin dryers. He does not know, the dealer does not know, but the manufacturer knows that this is a fact and is an explanation of half the complaints as to poor painting.

Honest prepared paints have won not only on their actual merits, but on account of convenience and economy. They are reasonably cheap, and are incomparably handy; but when all is said, the experienced painter is the proper person to apply even ready mixed paint.

He knows better than any one else the when and how, and the difference between painting and slathering is much greater than it appears to a novice.

A great deal has been said and written against prepared paint, chiefly in the interest of the painters, but the fact remains that the consumption after half a century's experience is increasing steadily.

* * *

About Filling, Varnishing and Finishing Interior Wood-work

By H. T. JAMES

SPACE will not permit of a long explanation in regard to wood fillers, but the proper filling or preparation of the wood, either open or close grained, is all important, and essential for the high grade finish.

Many articles are manufactured and sold under the name of "Paste Wood Fillers," for open grained wood that contain improper pigments, such as clays, terra-alba, whiting, etc.

Only materials of a certain hardness and transparency should be used of the silex order. This properly combined with dryers, varnish and oil produces the ideal filler.

This can be colored to match if the wood is stained; or beautiful effects can be produced by coloring the filler. This should be thinned to the consistency of flowing varnish with turpentine, applied by an experienced finisher, and ample time allowed for drying before applying the first coat of varnish.

The same conditions exist in the improper manufacture of liquid fillers or first coaters as in paste fillers due to the demand for something cheap by the majority of the contracting finishers and painters.

A liquid filler is intended to stop the suction, give an even surface, and prevent the first coat of varnish from sinking in.

On the Pacific Coast a large percentage of the interior finishing is redwood, fir and pine, and the architects, as a rule, pay too little attention to the first coat or foundation.

He may specify one or several good varnishes, and the varnish may be condemned for the reason that the painter or finisher has used a cheap rosin filler for his first coat.

While the writer does not believe in the use of shellacs except under certain conditions, good shellac is preferable to a poor liquid filler, and the advent of denatured alcohol will so cheapen shellacs that it will be used in the near future almost exclusively in the place of liquid wood fillers for first coating new work.

As a matter of fact the best, toughest and most durable varnish finish is produced on close grained woods, either trim or floors, by using a good varnish throughout.

If you wish, add a percentage of good silex paste filler to the first coat of varnish.

* * *

As To Varnish

Either a varnish is good for your wood-work or it isn't.

The cost of application is the same in either case. They differ in this:

The first cost of good varnish is more than the poor, but the lasting qualities, and the ultimate result in using the good saves the difference many times over.

The responsible agents are the workmen and the atmospheric conditions. The final result depends on the material.

A good varnish combining all that is requisite for a perfect interior finish is tough, elastic, will resist the action of hot water, will not crack or mar white; and it should take a beautiful polish if necessary, and leave a brilliant gloss if not rubbed or polished.

In using varnish the packages should be well corked when not in use, as it keeps the material clean and prevents evaporation; also prevents the varnish from going fatty.

When varnishing, the temperature should be between 70 and 75 degrees Fahrenheit, and the varnish the same.

Do not pour back unused varnish.

Varnish will not work properly if the temperature is too cold, too warm, or too damp.

Allow ample time between the coats for the varnish to become thoroughly dry all the way through.

Before varnish is used for finishing floors the wood should be perfectly clean, free from spots and stains and thoroughly dry.

Open grained woods should be filled in all cases with a good silex paste filler, and given two or three coats of tough, durable floor varnish.

Sandpaper lightly between coats and allow ample time for drying. Do not use shellac in any case.

If an egg-shell gloss is desired the final coat should be rubbed with pulverized pumice stone and raw linseed oil.

If a wax finish is desired one thin coat of tough, durable floor varnish should be given, and the floor wax applied after the varnish becomes thoroughly hard. Use a loaded brush after the wax sets.

One Coat Finishes

A word about the many so-called "One Coat Finishes," now being sold under various names and colors.

The manufacturers claim that these finishes, stain and finish at one application, and while pleasing effects are produced by them when first applied they soon present a dead appearance as they catch the dirt and dust, cannot be readily cleaned and are not sanitary.

To obtain permanency and bring out the beauty and grain of the wood, it should in all cases be finished properly with a good varnish.

This can be left in gloss or rubbed down to a dull finish if desired, or an imitation rubbed effect can be produced economically by using a Matt-Lac for the final coat. This contains no wax, will not mar and can be coated over with perfect safety.

* * *

The Refinishing of Floors

ONE matter to which attention should be given is the care of wood floors in a building. Marble floors are not practicable in office rooms, linoleum is distasteful to many because of the odor, and bare wood floors, unless they are properly taken care of, are likely to warp and splinter, fill with dirt and look very shabby The expense of refinishing floors from time to time may appear to some to be a foolish waste of money, but exactly the opposite is true, especially in buildings of the higher grade.

Finishing the floors improves the appearance of an office just as a new application of paint or calcimine will, and makes it more easily rentable. It makes the room neater and more attractive and the tenant is better satisfied. Aside from this, however, it keeps the floor in good condition and in the end will be found economical. If a floor has frequent attention the wood will not warp or crack and will last much longer. Many managers make it a point to refinish their floors every year with a high grade varnish. Some have been found who prefer to use a cheaper varnish and refinish twice a year. With modern appliances for satisfactorily removing old varnish, the greatest expense has been considerably reduced and it would not be surprising if good floors were soon the rule rather than the exception.—Building Management.

* * *

Might Have Used a Ladder

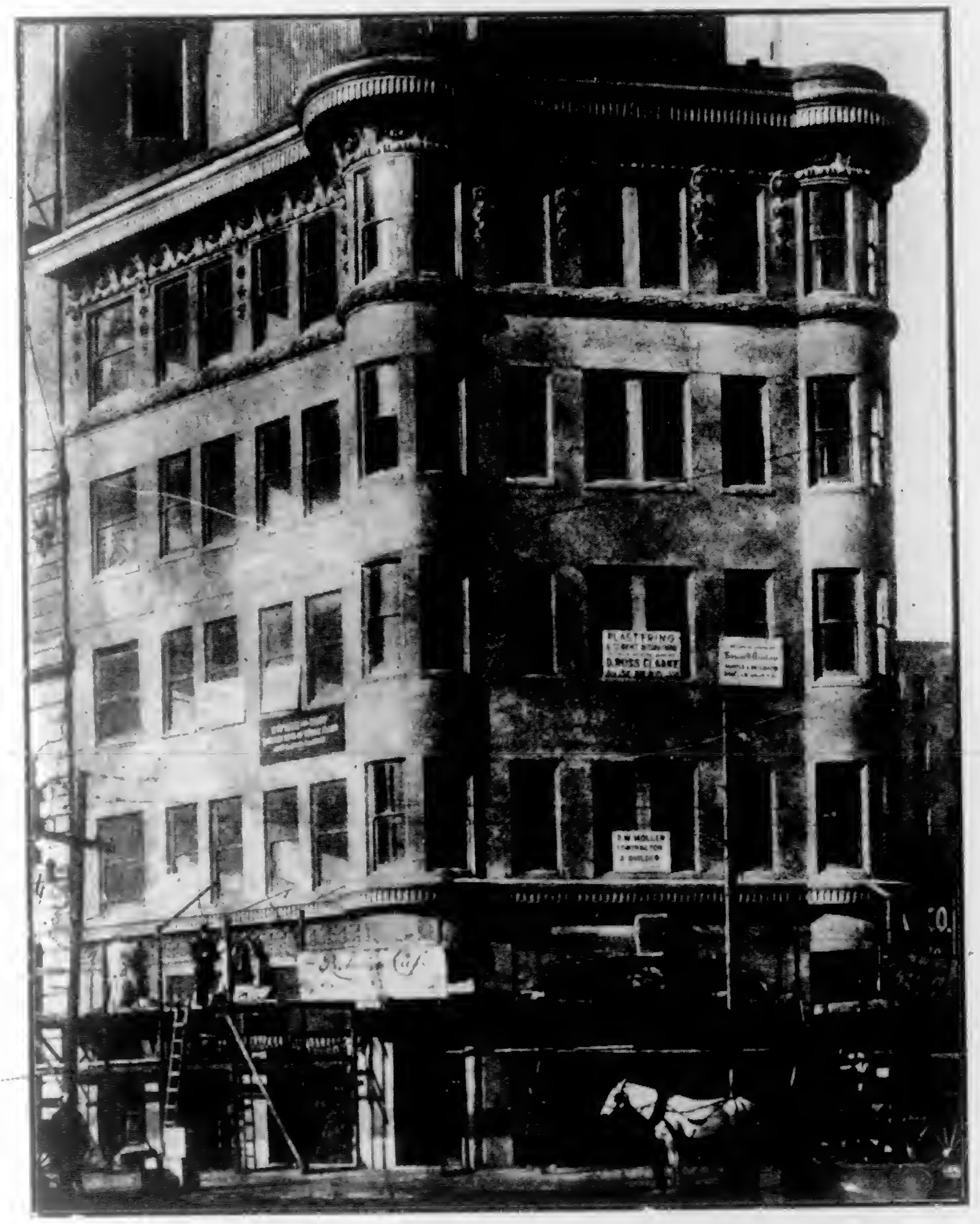
"That reminds me," said the architect, "when I was at Stanford University some years ago. There was a young woman there, an instructor in the faculty, very bright, very capable, but she didn't know quite everything.

"Her name was Miss Schallenberger, now teaching in San Jose. Would be her own architect. Drew up plans for a cottage. Didn't want them touched. Carpenters must follow her drawings in the minutest detail. It was to be an ideal little house.

"When it was nearly finished she suddenly inquired of the builder:

" 'But where are the stairs? How am I to reach the upper story?'

" 'Madam,' replied the builder, chuckling, 'your plans did not include a stairway.' "—Chronicle.



The Flannery Building Geary and Market Streets, San Francisco
Stone & Smith, Architects. Concrete Work by Victor Stanquist & Co
Ornamental Plastering and Cementing by D. Ross Clark

Interior Decoration

One of the New Friezes

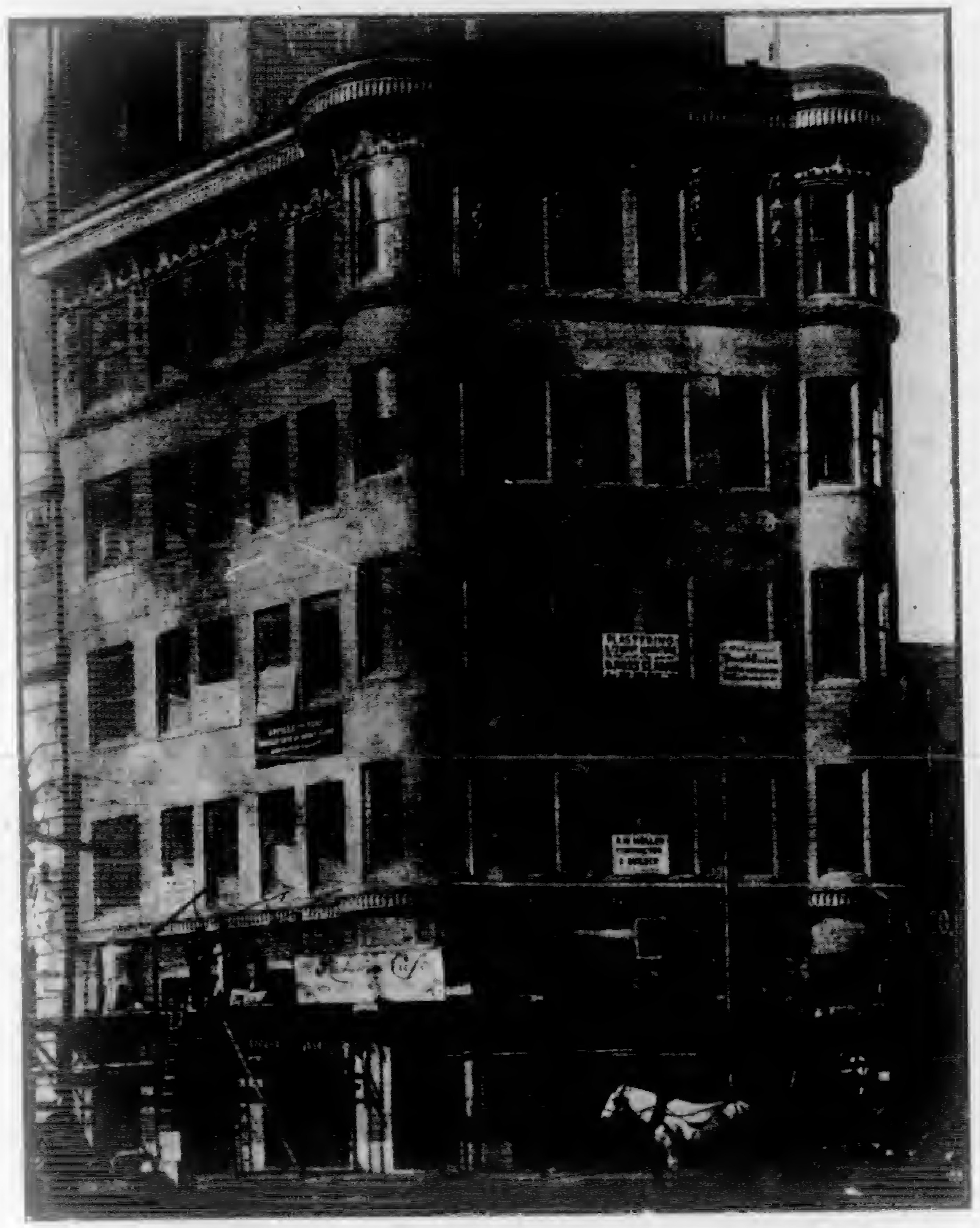
The Decorative Periods

Article I.—Introduction.

By C. WALTER TOZER.

ART is said to be the visible expression of one's belief in the beautiful, and it is unquestionably true that there is no motif in decoration that has not been suggested by nature. We therefore are obliged to assume that, all that is good in decoration is old. No matter what decorative period we may take up for analysis, we find that every motif, no matter how old, goes back to a suggestion by nature. Take, for instance, the Greek fret; the Roman acanthus; the fleur-de-lis; in fact, every motif found in the Renaissance period, and trace them back, and this is what one finds. Long before the Greek fret was used, the Chinese employed a similar form of design, suggested by the overlapping waves of the sea. The Roman acanthus and the fleur-de-lis came direct from the flora of Egypt. The palm, papyrus, and lotus, the growth and bloom of which had a religious significance to the people of the Nile, are the foundation of every motif in the Renaissance period. Motifs that have been in existence for centuries have been suggested by animal life. The claw foot that we see upon the Chippendale chair was Roman; the griffin, the sphinx, dolphin, bull, eagle, and beetle, all contributed suggestions that are now classics in design.

One of four influences always stimulates decorative development. They are: erudition, religion, commercialism and temperament. Each progressive stage of development constitutes what we term a period in design.



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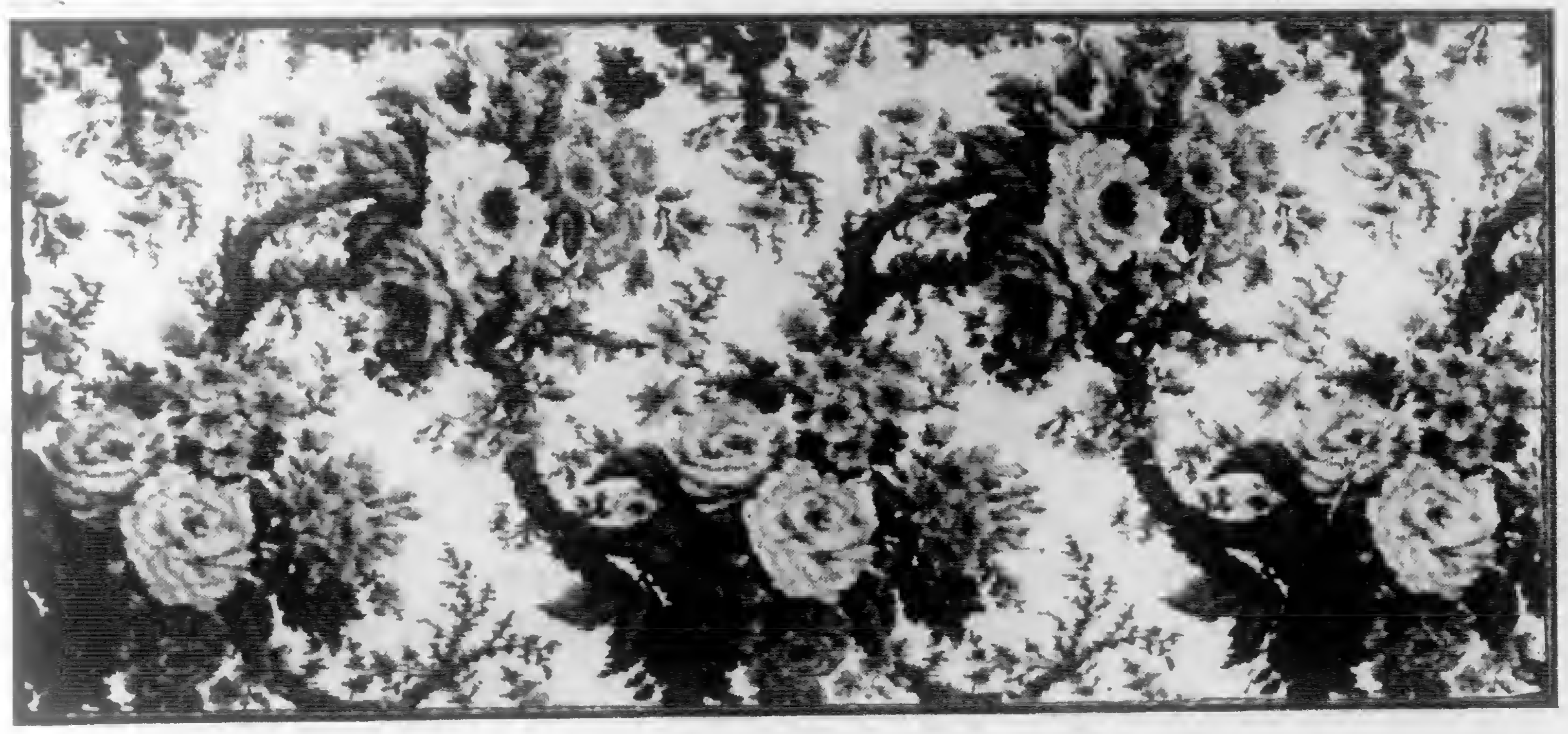
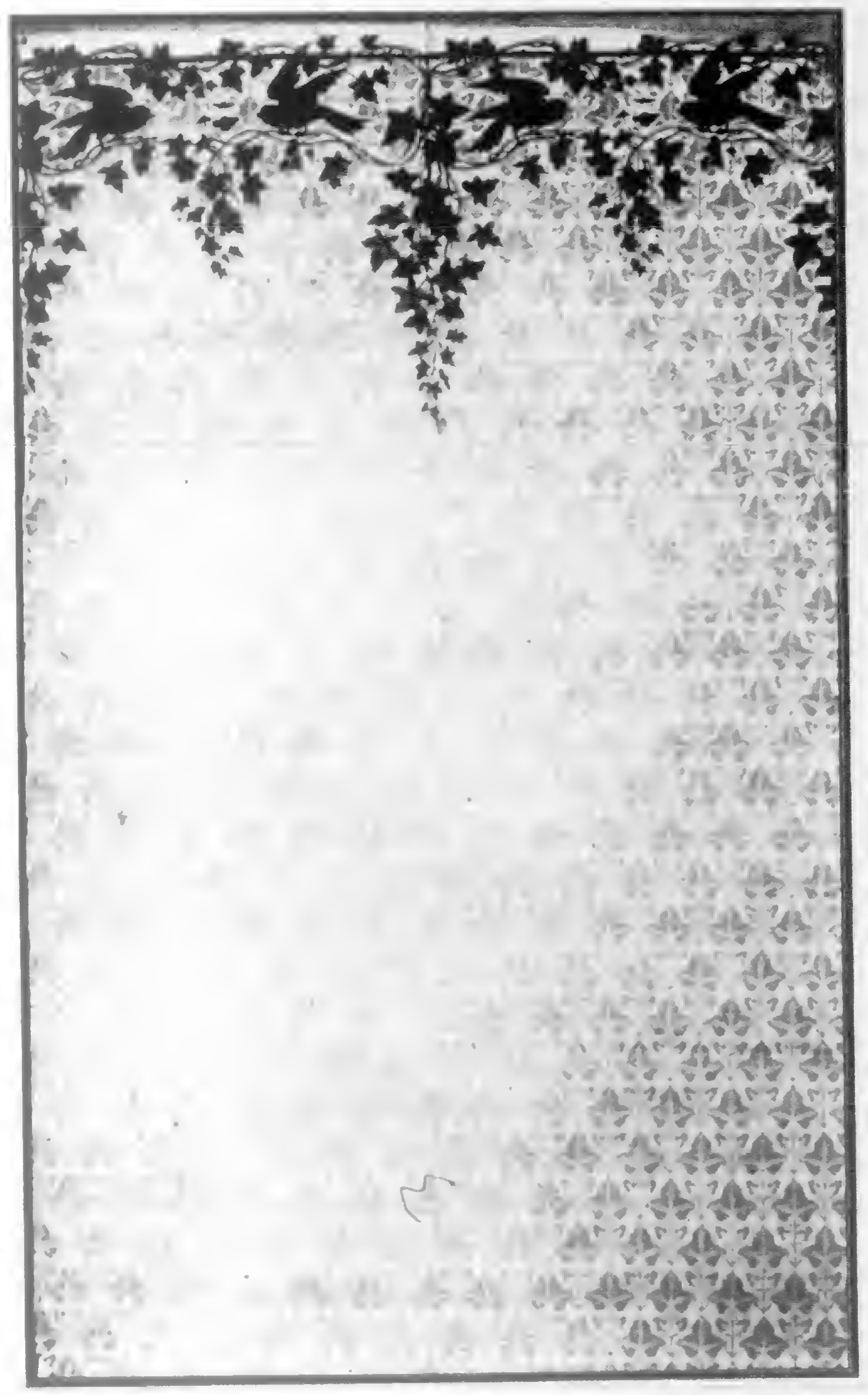
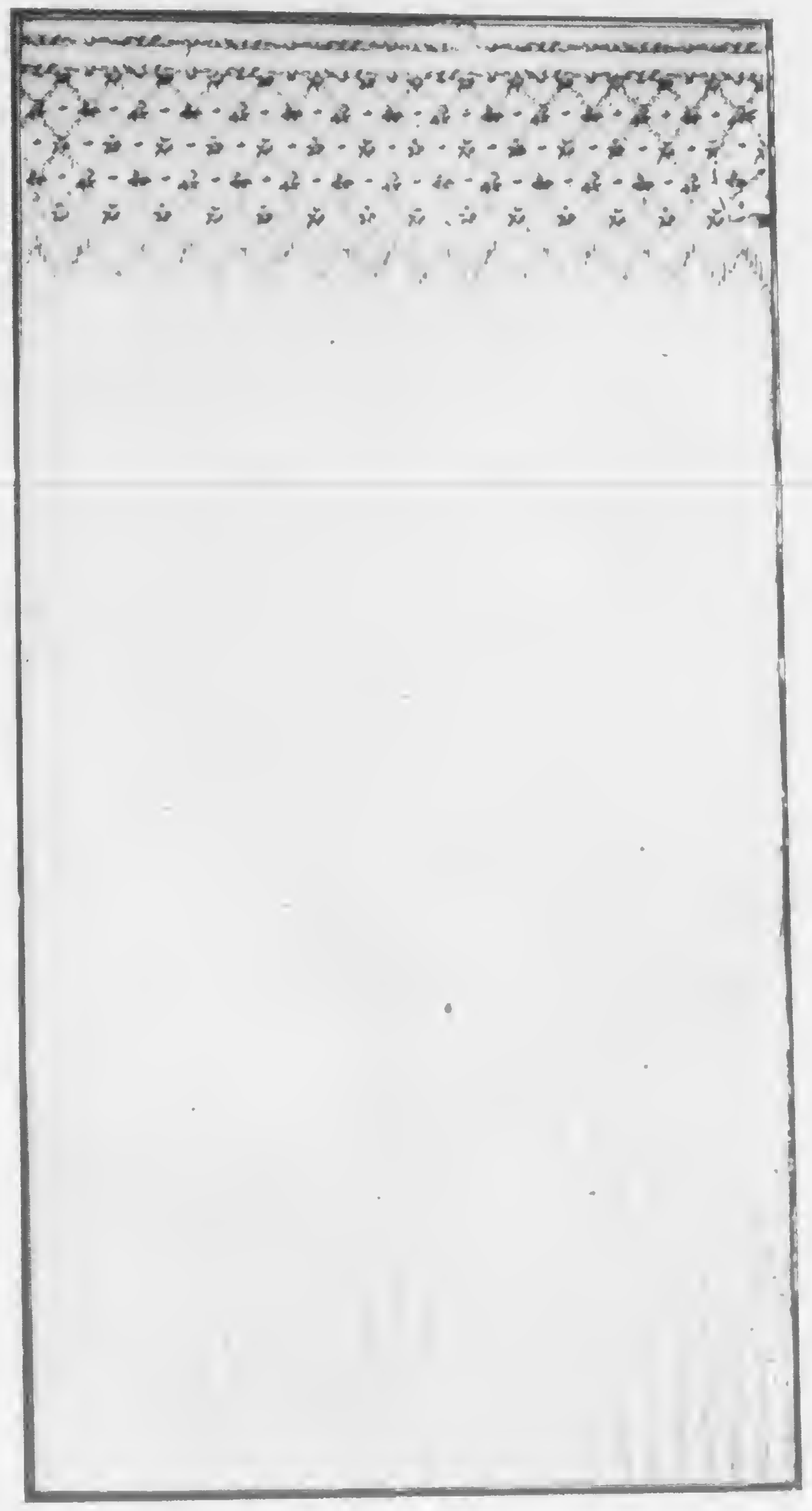


"The Skerington" Fine Shadow Silk Effect. Chamber or Parlor Work. Printed Warps to Match



Cream Border Treatment



One of Dumas' Crown Treatments. Cretonne to Match Motif in Border

A New Floral. Fine Upper Third or Frieze Treatment: Cretonne to Match

The middle ages were in darkness, because they were without erudition. A term of reproach—a synenym of vandalism—was the term Goth, and yet there came an awakening in art out of the Gothic period,—the Renaissance,—a period of erudition.

The elementary principles of the Byzantine, Romanesque and Gothic periods of design were characterized by religion, and the wars of the Crusaders spread Christian symbolism among the craftsmen of Northern Africa and the Far East.

The results of commercialism are found in composite design, merging the arts of one country with those of another.

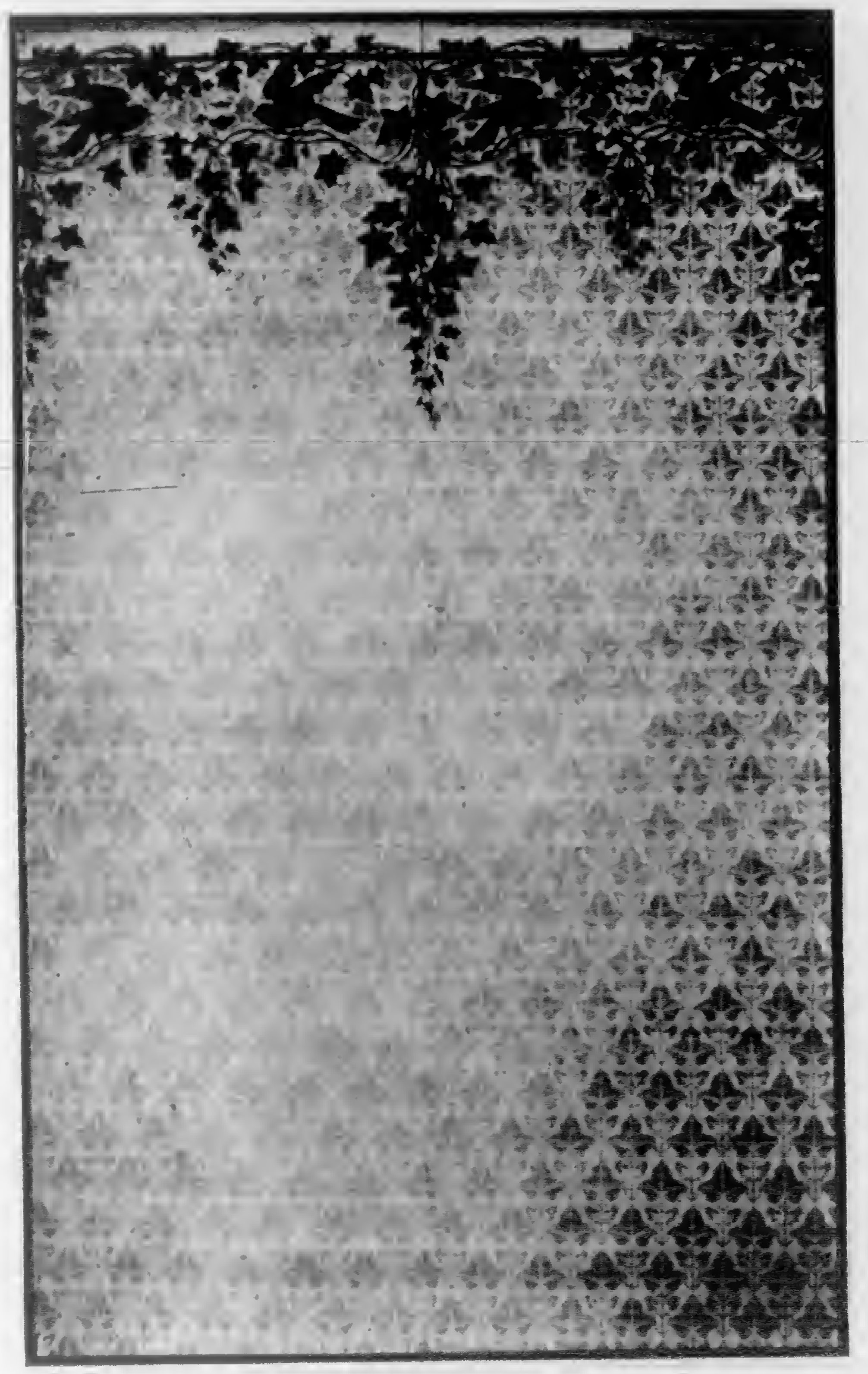
Temperament is the individuality of expression. "The true periods, or the periods of origin, are few. The periods of revival are based upon erudition, for in art there is nothing new." Why, even art nouveau, the "newest" art, sprung from our knowledge of the Japanese. The works of the brothers Adam came from the knowledge of Pompeii and Herculaneum restoration. Burne-Jones's style was founded upon his knowledge of the pre-Raphaelites, the worshippers at the Renaissance shrine, and thence we revert back to Greece, whose art was Egyptian.

It was the knowledge of geometry, a science originated through the necessity of resurveying the Egyptian fields, following each inundation of the Nile, that developed the beautiful in Moorish paneled ceilings, Gothic traceries, guilloche work, Greek and Roman band motifs and diaper patterns. We can go back to the time of Rameses II, 1340 B. C., to the practice of geometry, and all that was accomplished in geometrical design may be attributed to the erudition of the ancient Egyptians.

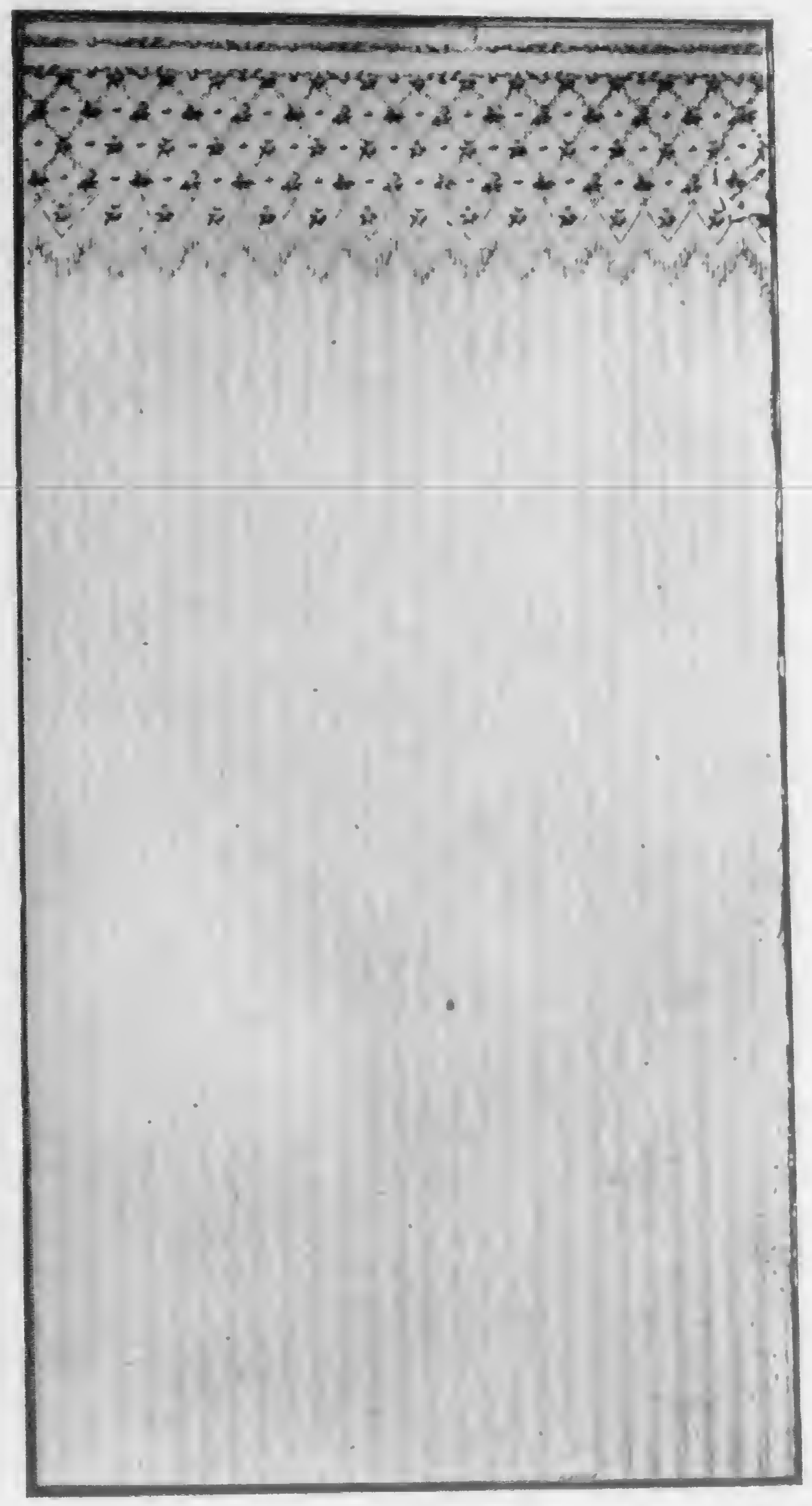
Assyrians and Egyptians expressed their religion in their designs, the floriculture of the country had its meaning. The beetle, the winged serpent, the palm, the papyrus, the lotus—all had religious significance. In later years Christian symbolism permeated the Byzantine, Gothic and Romanesque forms of decoration, and influenced also the arts of the Mohammedans who conquered Constantinople, the arts of the Saracens who settled in lower Italy and Spain, and through the conquests of the Crusaders, penetrated the Far East. Every line in true decoration is suggested by a thought that arises from religious conviction or out of the effort to perpetuate some axiom of Truth or Beauty.

Commercialism has been much deplored as a disturbing influence in art, but is it not, nevertheless, commercialism that is a stimulus which creates, like new soil or new seed? The Queen Anne period in England was a period created by the furnishings introduced by the Dutch traders. The Chinese influence in England and France during the eighteenth century was primarily commercial.

"The Sherington" Fine Shadow Silk Effect. Chamber or Parlor Work. Printed Warps to Match



Cream Border Treatment



One of Dumas' Crown Treatments. Cretonne to Match Motif in Border.

A New Floral. Fine Upper Third or Frieze Treatment; Cretonne to Match

The middle ages were in darkness, because they were without erudition. A term of reproach—a synonym of vandalism—was the term Goth, and yet there came an awakening in art out of the Gothic period,—the Renaissance,—a period of erudition.

The elementary principles of the Byzantine, Romanesque and Gothic periods of design were characterized by religion, and the wars of the Crusaders spread Christian symbolism among the craftsmen of Northern Africa and the Far East.

The results of commercialism are found in composite design, merging the arts of one country with those of another.

Temperament is the individuality of expression. "The true periods, or the periods of origin, are few. The periods of revival are based upon erudition, for in art there is nothing new." Why, even art nouveau, the "newest" art, sprung from our knowledge of the Japanese. The works of the brothers Adam came from the knowledge of Pompeii and Herculaneum restoration. Burne-Jones's style was founded upon his knowledge of the pre-Raphaelites, the worshippers at the Renaissance shrine, and thence we revert back to Greece, whose art was Egyptian.

It was the knowledge of geometry, a science originated through the necessity of resurveying the Egyptian fields, following each inundation of the Nile, that developed the beautiful in Moorish paneled ceilings, Gothic traceries, guilloche work, Greek and Roman band motifs and diaper patterns. We can go back to the time of Rameses II, 1340 B. C., to the practice of geometry, and all that was accomplished in geometrical design may be attributed to the erudition of the ancient Egyptians.

Assyrians and Egyptians expressed their religion in their designs, the floriculture of the country had its meaning. The beetle, the winged serpent, the palm, the papyrus, the lotus—all had religious significance. In later years Christian symbolism permeated the Byzantine, Gothic and Romanesque forms of decoration, and influenced also the arts of the Mohammedans who conquered Constantinople, the arts of the Saracens who settled in lower Italy and Spain, and through the conquests of the Crusaders, penetrated the Far East. Every line in true decoration is suggested by a thought that arises from religious conviction or out of the effort to perpetuate some axiom of Truth or Beauty.

Commercialism has been much deplored as a disturbing influence in art, but is it not, nevertheless, commercialism that is a stimulus which creates, like new soil or new seed? The Queen Anne period in England was a period created by the furnishings introduced by the Dutch traders. The Chinese influence in England and France during the eighteenth century was primarily commercial.

The Persian spirit, conspicuous in the sixteenth century Italian work, and the East Indian spirit of the later century, as well as the influences which affected contemporary Spanish and Portuguese design, were all commercial. Prior to the discovery of America, Portugal and Spain, envious of the trade in the East controlled by their neighbors of the Mediterranean, endeavored to find a western passage to India. We know the result of Columbus' voyage, but it is well in connection with this subject to remember that it was prompted by that commercialism which spread the Eastern influence throughout Europe, and which reflected the Eastern imprints upon the arts.

And as regards temperament: Decorative art has been and always will be subjected to the influence of temperament. Decoration is the impulse of nature. We find it in the budding of the flower, or in the child's delight over a bit of ribbon. The bud in nature will evolve new forms and colors according to the soil and culture, and art shows the same subtle changes. In nature we note the change as we travel, north or south. In art we note the change, not alone as affected by topography, erudition, religion and commercial influence, but also temperament. Given, for example, a Renaissance theme of classic revival and we find the composition of the English, German, Italian, Spaniard, Frenchman, all totally different. Into the work of each is unconsciously injected his native temperament. We may find a new handling of a theme, but it is simply temperamental. The sturdiness of Dutch character stands out in Dutch workmanship. The Puritan spirit is betrayed in the Jacobean type of decoration. We have no need of history to follow the temperament of the French people. Excess and sensuousness are suggested in the voluptuous decorations, which, encouraged in the time of Louis XIV, marked the history of the people down to the Revolution, when temperament changed and adopted a simpler form, in turn succeeded by the martial spirit aroused by Napoleon's career.

There are only five distinct orders in classic architecture, but out of these spring innumerable related parts, all stamped by the influence of erudition, religion, commercialism and temperament.

* * *

The New Wall Papers and How they are Selected

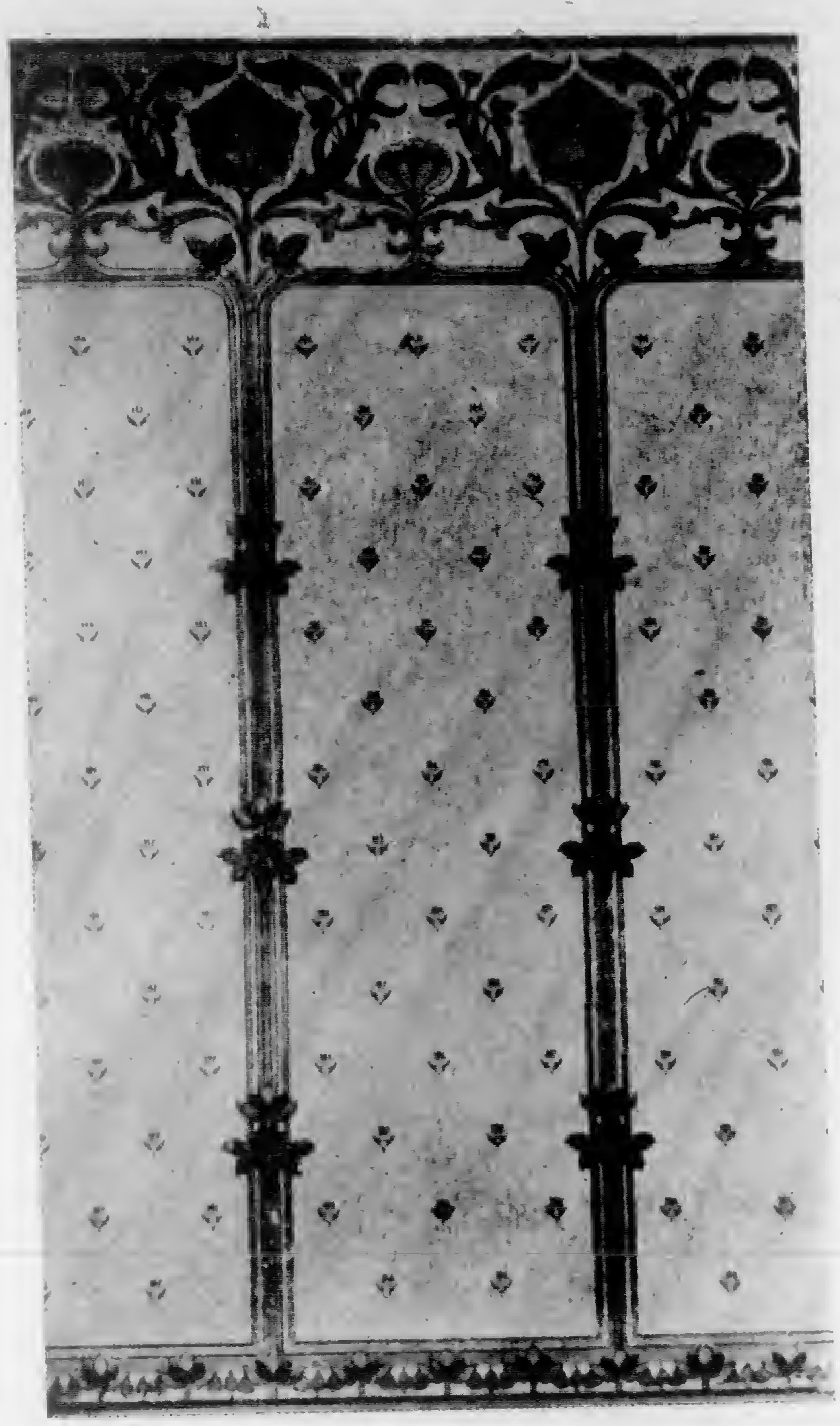
By C. WALTER TOZER.

VERY few people, indeed, realize what a task it is to the wall paper manufacturer to select the new patterns and colorings for his papers from season to season. It is a thing most every one never thinks about. We look at a certain wall paper; the pattern and coloring either pleases us or does not please us. This is all we think about it.

Never until this summer did the writer fully realize the immensity of this work. While in New York this summer, however, he was enabled to see what the manufacturer is compelled to go through in getting a new line ready.

To those in the trade a wall paper season dates from one July to the next. While to the user of wall paper there are really two seasons. The fall and the spring of the year, when the greatest activity in decorative work is manifest.

Every year the representatives of most of the leading wall paper manufacturers throughout the United States assemble in New York City for two weeks or more in the month of August, to show the advance samples of their lines for the coming season. The papers shown last August, for example, are those now being manufactured, and will be delivered to the decorators for next spring's trade.



Crown and Panel for Living Room or Library

Just after this convention closes in New York City, the manufacturer begins planning his line for the next August convention. He first has his patterns to determine upon. Professional designers (of whom there are a great many in New York), call upon him and submit water color designs and sketches they have executed. Those that suit are bought and the designer is not to sell the same design to any other manufacturer. Very often the submitted designs have to be changed regarding some detail. An instance occurred in the writer's presence, while with a manufacturer engaged in selecting new designs for next season. A certain floral sketch was shown. Upon it were two birds, one slightly larger than the other. The larger bird was at rest upon the stem of a large rose, and on the left of the sketch. The smaller bird was placed lower down, on the wing, and to the right. To the manufacturer's discerning eye, there should have been but one bird shown. That, the larger one, and not at rest but on the wing, and placed a trifle higher than the position occupied by the smaller bird. So the design had to be changed to conform to the manufacturer's judgment. Many times he will give orders to a designer to execute a design similar to a "big seller" of the season before; or turning to a certain hall or parlor pattern in his last year's line, says: "I want something to take the place of this." Then, too, a great many successful patterns of the imported lines are modified or copied. Some of the manufacturers go through the fabric and carpet lines for their patterns and either copy or alter the pleasing ones and reproduce them in their wall papers.

Thus the process of examining and collecting patterns continues until early in the spring. Then the final selection is made of the designs they will use for the following year; the rolls or blocks are made, and the factory artists and superintendents get to work to see what combinations of color will be suitable for designs, in addition to those shown in the original drawing made by the artist. It frequently happens that some totally different coloring or effect will produce even better results than the designer had any idea of. For example, a pattern intended originally for a flat in colors may look better as a two-toned paper on a duplex or ingrain ground, or it may look especially well as a tapestry. In fact some of the most attractive effects are many times sort of accidents, as a result of experimenting. The development of these various possibilities of a pattern requires not only good color training and artistic judgment, but it needs also a thorough knowledge of wall paper machinery and its limitations and capabilities, such as the artist designer rarely possesses.

Much time is spent in this sampling process (the greater part of June and July), trying out each pattern or set of blocks in various ways. Some are rejected at once, while of others that seem to be satisfactory, perhaps fifty or a hundred rolls are run (for samples), and then another way is tested. Finally all the new patterns have been tried out, and a record has been kept which will indicate the cost of production of each way of each different pattern, that will enable the selling price to be fixed.

About the first of August each factory makes up several sets of sample books containing the different patterns and colorings that have been passed upon and finally selected by the artists, factory superintendents and sales manager, and the designs are numbered and priced. Then the factory's salesmen are ready to move upon New York City, for what we term the convention, or the advance showing to the trade. Just when this custom originated it would perhaps be hard to say, but at any rate it has become a well-established fixture in the wallpaper trade, and the buyers for the various large jobbing houses, book houses and large retailers from all over the country, wend their ways to New York at the same time, ready to place their orders for the new season.

For many years the headquarters of the visiting manufacturers has been at the Gilsey House, Broadway and Twenty-ninth street, where of an evening during the convention, one can count up a hundred or two wall paper men. This year, however, several manufacturers established themselves at the Breslin, on the opposite corner; while others were at the Victoria, and still others at the Grand Hotel, both of which are but a short distance away. The New York City manufacturers, as well as some of those having salesrooms or offices in the city, showed their goods at their own salesrooms. The show this year opened August 6th, and practically closed August 18th, a very short season. All the manufacturers reported the business done to be unusually good.

The lines, as a rule, showed a great advance in artistic merit and excellence of color over those shown in previous seasons, the manufacturers seeming to find that it pays to cater to a more refined and educated taste. Indeed, it is unquestioned that the general standard of taste has advanced very much within the past few years, owing to the influence of more progressive decorators, and to the influence of the popular magazines of general circulation that have devoted so much space to decorative subjects and have undoubtedly contributed very much to educate the public in artistic matters, however astray they may sometimes wander from a practical standpoint. Another noticeable thing is that practically every manufacturer is catering to the needs of the decorator and offering independent friezes and side walls; decorations and small clothy effect figures suitable for paneling, and many of the wall papers are particularly recommended because of their adaptability for use as cut outs and for other original treatments. The new season's wall papers will appeal to the decorator largely because of their possibilities. Another thing noticeable is the general absence of fresh papers that appealed to the public simply because they were odd, even though oddity often meant ugliness. In color there seems to be no prevailing tendency. The browns and tans, so much seen last year, are less in evidence except in duplex and ingrain papers, where these shades are still prevalent.

Many beautiful effects in gray are shown. One or two factories showing a great many papers with a happy combination of gray and green. Very few strong red papers were noticed in any of the lines, and only occasional patterns were shown in the once popular delft colorings. Greens are still prevalent, and the reason is probably because this color usually looks well with most furnishings, especially with the popular mission styles. The chintz and fabric colors are in evidence in bedroom papers, as well as natural colorings of flowers and foliage on white or colored grounds. Dresden colorings are also seen quite a good deal. Metals are used quite a good deal, but, as a rule, quite differently from the old-fashioned gold parlor papers, and show evidence of much greater refinement of taste.

As regards the prevailing style of patterns, we might say that good floral effects seem to be more plentiful, and to be executed with a greater care. Large, bold patterns printed on grounds in imitation of fabrics are quite plentiful in all the lines. Fabric prints are also found in a great variety of patterns and range of colorings. These seem to be very popular now for use in conjunction with the many landscape, seascape and independent friezes. Quite a great many side walls formerly printed as independent hangings only, are shown with pictorial friezes to match. The tendency of the manufacturers, no doubt due to the public demand, seems to be toward the return of the matched border idea. The independent wall with a moire or tinted ceiling to match, has been in vogue now just long enough to cause the public to demand something else. Crown borders were shown to a fair degree, but borders suitable to be cut out were in greater number than formerly.

In fact, the decorator has a greater variety of novelties in wall paper this season than ever before in the history of wall paper manufacture. There seems, indeed, to be no limit to the resourcefulness of the manufacturer. No sooner does a critical writer call attention to a shortcoming or limitation of wall paper as a decorative possibility, than immediately there follows some new and hitherto unheard-of novelty which entirely overcomes a given criticism.

Not only are the wall paper manufacturers acutely alive to the shortcomings of their own product, but they also show an ability to recognize the shortcomings of other decorative materials, and with commendable enterprise they take note of those shortcomings and advance the special advantages of their own material. This is legitimate business enterprise and should be carefully followed and studied by the decorator or decorative paperhanger, not only for the purpose of following up the introduction of the new things which are being constantly introduced into the market, but also to study the manufacturer's methods of overcoming obstacles. More than half of the successful decorative work consists in overcoming obstacles and covering over defects in such a way that they no longer appear as defects, but in many cases as unique features. Up to a certain point wall paper as a covering for walls, in the ordinary sense of the word, is a complete success to most people. It is a quick and effective way to entirely change the effect of an apartment's decoration.

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Regular meetings, the second Friday in January, April, July and October.

Personal Mention

D. Franklin Oliver, of the architectural firm of Oliver & Foulkes, with offices in the James Flood building, has gone East for ideas which will be embodied in plans for a big office building which the firm has been authorized to prepare. John Galen Howard, of the firm of Howard & Galloway, will also make a trip East, one of the reasons for the journey across the continent being to gather up a few draughtsmen of which there is a great scarcity in San Francisco just now.

Architect Maxwell G. Bugbee has associated with him Henry T. Johnson, C. E., formerly of Pittsburg, Pa. Mr. Bugbee has moved his offices to the Saint Mungo building, northwest corner of Fillmore and Golden Gate avenue. Among the large contracts which Mr. Bugbee has taken since the fire is a $150,000 apartment house to be built on Broadway, San Francisco, by the Enterprise Realty Company.

Oakland Architects Busy

Never in the history of Oakland have the architects of that city been so busy as now, which is a good indication that the city across the bay is growing. Architects McCall and Wythe, who have offices in the First National Bank Building at Fourteenth street and Broadway, have about $250,000 worth of work in their office, including business blocks, apartments, flats and residences.

The firm has just been authorized to prepare plans for a 54-room office building on Fourteenth street near Broadway; also a 50-room hospital at Claremont, to cost $20,000; residence for J. S. Delancey, an Oakland attorney, to cost $5000, and a three-story loft building for C. T. Morton, at Eleventh and Webster streets, to cost $10,000.

"Lucky" Baldwin's Hotel

"Lucky" Baldwin is to build a $200,000 hotel at Lake Tahoe.

The new hostelry is to be somewhat after the style of El Tovar, in the Grand Canyon of the Colorado. The same architect is at work upon the plans. It will be rustic in effect, and the dining-room, all its windows overlooking the lake, will accommodate 1000 persons. The pillars in this dining-room will be the natural trunks of huge spruce trees, the artistic rough bark left in its natural state.

A great power plant to generate 300,000 horse-power has just been completed. It is all ready for the installation of the machinery early in the spring. This plant is to furnish the power for Baldwin's own sawmill at which all the lumber will be prepared for the building. He will be independent of the lumber combine. The timber is close at hand.

San Jose Normal School

The San Jose State Normal School trustees have under consideration a number of plans submitted by various architects for the rebuilding of the Normal School, which was badly wrecked by the earthquake. The members of the board are: Dr. Thomas Addison, chairman; Fred W. Hall, George H. Mastic,

Senator J. B. Sanford, Frank H. Babb, Superintendent of Public Instruction Thomas B. Kirk, and Dr. M. E. Dailey, president of the San Jose State Normal.

Architects Howard and Galloway and J. C. Newsome of San Francisco and F. S. Allen of Pasadena, have submitted plans for the mission style. The architects and members of the board of trustees are in favor of the mission style of architecture, reinforced concrete and a height of not over two stories.

A meeting will be held soon to adopt plans for the building. Senator Walker will introduce the bill for the appropriation in the Senate and Assemblyman Dr. J. T. Higgins will introduce the bill in the House.

Feat in Bricklaying

In the erection of the House of Representatives' office building, adjacent to the United States Capitol at Washington, an interesting fact has developed in connection with the brick masonry work. The first brick was laid at the site on the afternoon of July 3, 1905, and on July 3, 1906, there had been laid in the walls 11,000,000 brick. This is believed to be the greatest number of brick laid on any building in one year in the United States, and probably in the world. One of the causes conducing to this record-breaking feat was the remarkably "open" winter of 1905-06. In those winter months the work continued almost without interruption from either snow or cold and not more than twelve or fifteen days were lost during the entire winter by reason of weather conditions.—Scientific American.

Petition Is Denied

The San Francisco Supervisors' Fire Committee has denied the petition of property owners that the building law be amended to permit of wooden construction encased in fire-proofing in area and light ways above the first story of Class C buildings. Chief Engineer Shaughnessy of the Fire Department vigorously opposed the proposed amendment on the ground that it would increase the danger in case of fire owing to falling walls.

Suspend Tariff on Building Material

The Mission Promotion Association has addressed a set of resolutions to President Roosevelt, the members of his Cabinet and Congress, asking that a drawback of the import duties be allowed on all building material brought into San Francisco for a period of five years. The State Legislature will be asked to use its influence to secure the desired legislation.

The Hotel Granada

A new Hotel Granada, larger and more attractive architecturally than the one which formerly occupied the southwest corner of Sutter and Hyde streets, will be erected on the old site by Dr. Julius Rosenstirn. The plans by Architect Frederick Noonan have been accepted and work will be begun immediately in clearing away the debris of the old Granada. The building will be eleven stories high, thoroughly of reinforced concrete, and will cost $400,000.

The hotel will cover 117½ feet on Sutter street and 77⅛ feet on Hyde street. It will be the first reinforced concrete structure in what is known to architects as post and girder construction erected in this city. An entire skeleton framework of concrete will be erected, and the floors, walls and partitions put in place afterwards. This system has been employed by Architect Noonan in the East in the erection of a number of large buildings. It has been found to be far more rapid in execution than the old way of building one complete floor at a time.

In furnishings and equipment the new hostelry will class with the finest establishments in New York and San Francisco, and will be second to none in this city.

There will be nearly 250 guest chambers, so arranged that they can be converted into apartments of one, two or three rooms, with a bath for each room, or one or more baths for the whole apartment. The building will be supplied with high-speed elevators, a compressed air cleaning plant, and will be heated with low pressure steam.

Besides this venture Dr. Rosenstirn intends to erect a ten-story office building on the northeast corner. This will cost about $125,000.

Rudolph Spreckels' Building

Rudolph Spreckels will shortly commence the construction of a fine building, to cost $750,000, on the site recently purchased from the Masonic Hall Association, at Post and Montgomery streets. It will be used to house the First National Bank and offices.

Joseph D. Grant of the Murphy-Grant Company has arranged for the immediate erection of a steel-frame twelve-story building on the southwest corner of Bush and Sansome streets, formerly occupied by the old firm.

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THE DECORATIVE PERIODS

Beginning with this number and continuing through the year, The Architect and Engineer will run a series of short articles on the decorative periods. These articles will be made up of material culled from several well-known works upon the subject, and we beg the privilege of quoting freely. We will not claim originality for the greater part of the matter, but will only try to assemble correct and trustworthy material, and endeavor to present it in an instructive and interesting way. It is planned to give chronological tables of the decorative periods and any other information that may be considered valuable and interesting.

To understand and appreciate good decorative art generally, we believe it necessary to have some acquaintance with the styles which at different periods have enjoyed a ruling vogue. That these styles are the expression of passing fashion does not detract from their artistic value. Although the early periods are full of interest, and are worth studying, both from the evolutionary and the artistic points of view, still our rapid survey will not permit us to more than touch upon them. The later periods, however, from the Renaissance on and more especially the French and English periods, we will dwell upon more fully.

The article this month is devoted to cause and effect, as it were, or more properly speaking, an introduction to the subject.

RESTORING THE OLD FRAUNCES' TAVERN

On the Staatendam of the Holland-American line, which recently arrived in New York, came 14,000 white bricks, which were guarded very closely upon their landing and delivery, for they were duplicates in style and quality of bricks imported 200 years ago.

When the work of renovating the old Fraunces' Tavern, at Broad and Pearl streets, New York, was begun by the Sons of the Revolution, it was expected that materials could be found in New York to restore it about as it was when Washington said good-bye to his officers in the long room of the old hotel. In the two centuries that the building has stood it has undergone so many repairs that few people could tell anything about how the structure originally looked.

Among the things that happened to it was the tearing out of the lower wall facing on Broad street to make a show window for a store that afterward became a saloon. In the work of restoring the building for a clubhouse for its patriotic owners this wall has been put back, all except the outer facing, which was of small white bricks brought over from Holland. After a trying hunt, fifteen miles from Rotterdam was found the very brick-kiln where, 206 years ago, the bricks for Fraunces' Tavern were made. They are still making the same bricks at this place and the order for the 14,000 was placed.

The old fireplaces in the tavern have been rebuilt, the room where the saloon was is to be a cafe, the historic Long room has been restored, and the reconstruction is being done so thoroughly that the building will stand without change, it is said, for probably 300 years.

FEARS ANOTHER WOODEN CITY

By F. W. Fitzpatrick in Fireproof Magazine.

I AM afraid that the prophecy that San Francisco will be rebuilt a wooden city will be all too true. Apart from timber being brought into that city exclusive for the temporary buildings, it is reported that 2,000,000,000 feet of lumber has been ordered, or is to be ordered, for the "permanent" reconstruction of the city. Forty million dollars' worth of kindling with which to make another $300,000,000 fire!

The New York Commercial was hopeful that the price of lumber would go skyward so far that it would soon be prohibitive, saying, "With fir at $16 it would not be long before Class A, steel and tile building, will be the cheapest form of construction." One trouble is that people, in their anxiety to build and believing that there may be delays in steel, and knowing that, unfortunately, they can get wood at almost any minute, are letting their haste get the better of sober judgment and are going ahead with the same old tinder-box buildings.

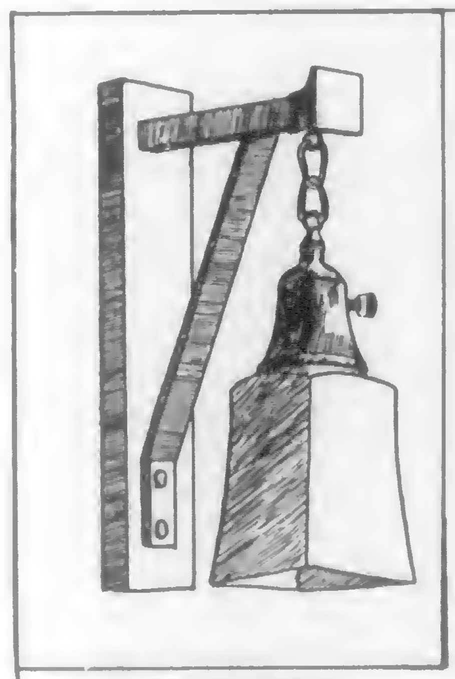
Reports from San Francisco, as to rebuilding of the better kind, are not as favorable as we could hope for. The lack of labor, the extortion and suicidal maladministration of the labor union power, are anchors that will hold back that ambitious, though sorely stricken city. Think of it—bricklayers, $7 a day; hodcarriers, $4; plumbers $6; unskilled laborers, $2.50; and, with all that, room for 30,000 more skilled workmen, if the unions will let them work. Surely with 18,000 buildings in prospect, $190,000,000 for wages, the unions need not be too rapacious and anxious to divide the proceeds among their own limited membership. They might take down the bars for a little while. They ought to remember the goose with the golden egg. It may seem a far cry, but there is always the possibility of the real people, the great majority, even the workmen themselves, tiring of this tyranny of the oligarchy of labor leaders and rising up in their strength and throwing off the yoke, even to the extent of reintroducing, for instance, cheap Chinese labor.

The Publisher's Corner

Make Swell Lighting Fixtures

One of the new San Francisco firms that has already made a commendable impression on the business community is that of Adams & Hollopeter, makers of lighting fixtures, at Market and Laguna streets. This firm was organized immediately after the fire by William Adams, salesman and buyer for the Roberts Manufacturing Company, William H. Hollopeter, of the mechanical department of the same firm, and Frank Adams, and reorganized about a month later by including in the partnership Mr. John P. Young, managing editor of the San Francisco Chronicle.

Adams & Hollopeter have one of the best equipped fixture factories in the city and enjoy the distinction of being the only lighting fixture firm in San Francisco, if not on the Coast, dealing in goods exclusively its own make. Although having first had to build and equip its factory, the firm was delivering goods by the first week in July and since then has handled some very good contracts. Among these is for the new Palace Hotel, fixtures having been furnished for the outside, main vestibule, lobby, ladies' and men's parlors, and private dining room; also crystal chandeliers and brackets for the new Diamond Palace which Colonel A. Andrews has opened on Van Ness avenue. The firm has also fitted out a large number of banks, stores, saloons, flats, apartment houses, and residences, and has an excellent line for all such requirements. Adams & Hollopeter are adhering strictly to the policy of taking no more orders than can be delivered on contract time, which is a policy no one will appreciate more than architects.



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Morgan Oyster Company's Building, San Francisco
E. J. Vogel, Architect. H. L. Petersen, Contractor

Contractor Petersen Busy

H. L. Petersen of the San Francisco Artificial Stone Company has completed the erection of a substantial building for the Morgan Oyster Company, on Third, near Townsend street. It is interesting to note that there has been more permanent building on this thoroughfare than on any other street in the city since the fire. The structure which Contractor Petersen has put up for the Morgan Company is of reinforced concrete and it is one of the first buildings of that material to be occupied after the April disaster. It is a one-story affair with basement, and was designed by Architect E. J. Vogel. The exterior is simple from an architectural viewpoint, the mission style being followed in a general way.

The building has a frontage of 75 feet on Third street and a depth of 140 feet. The exterior is arranged to meet the requirements of the oyster company for carrying on its extensive business in bivalves. A well appointed office is a feature of the building.

Mr. Petersen is, indeed, a busy man these days, for in addition to the Morgan building he has several good jobs, among them the Empire malt house on Francisco street, between Powell and Mason streets, which is to be a two-story steel and concrete building; a reinforced concrete malt house for the Pioneer Company on Stockton street, and the foundations for the United States Custom House.

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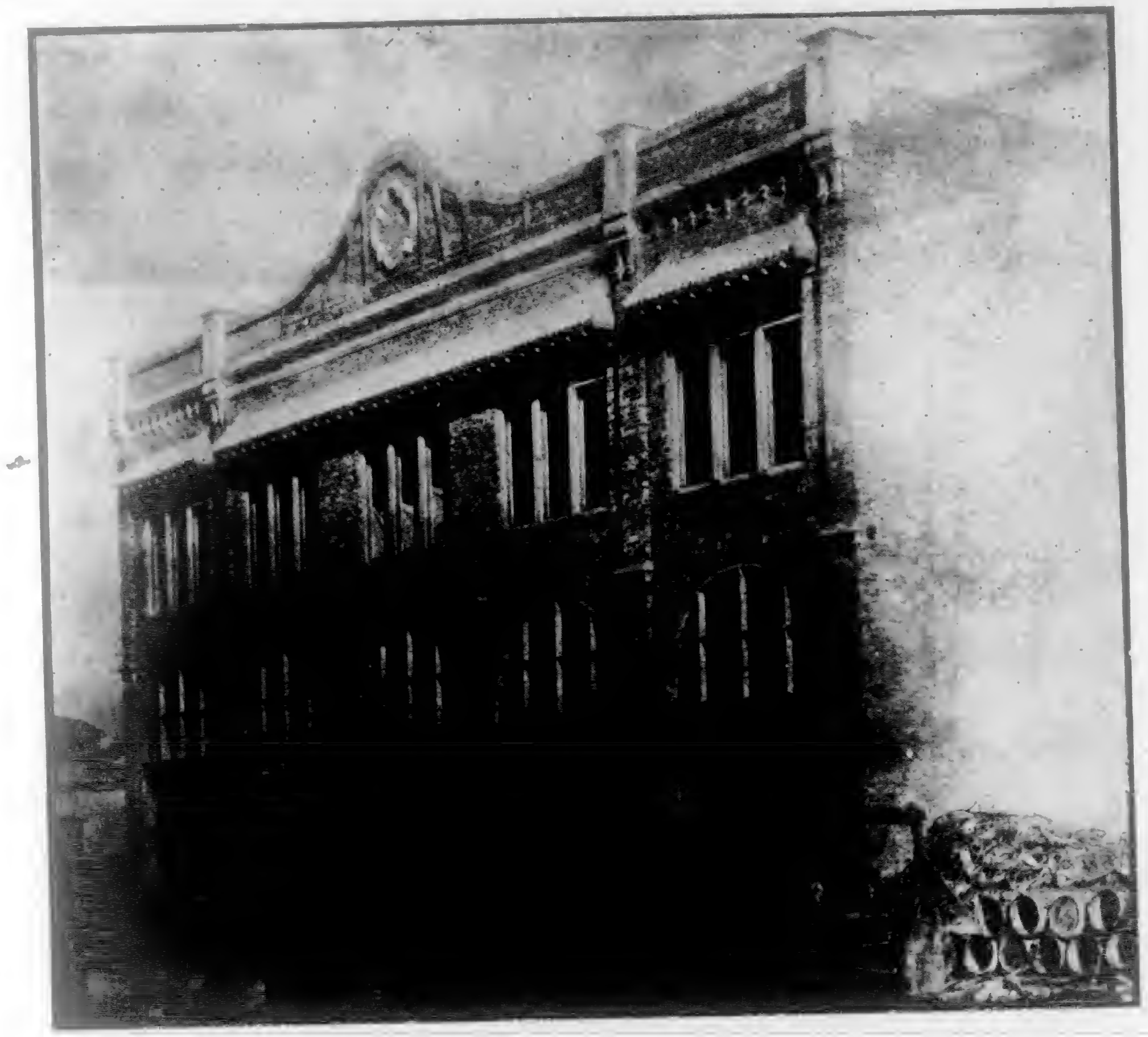

New San Francisco Office and Salesrooms of the Joshua Hendy Iron Works

Joshua Hendy Iron Works

The Joshua Hendy Iron Works will soon move into its new office and salesroom building on Fremont street, San Francisco. The building is two stories and designed after Mr. Hendy's own ideas. It is a commodious structure, in every way up to date and an ornament to that part of the city. The company's new machine works at Sunnyvale are also nearing completion. The buildings are of frame construction with hundreds of glass panes for light and air. The shops are, without exaggeration, among the largest on the Pacific Coast, and when in full operation will give employment to a small army of skilled workingmen. The company is now making a specialty of architectural and structural iron castings, as its new name would imply. Later on a full description of the big Sunnyvale plant, with illustrations, will appear in the Architect and Engineer.

Victor Stanquist's Good Work

Victor Stanquist, a well-known contractor, is being complimented for the excellence of his work on the new Flannery building at the gore of Market, Geary and Kearny streets. All the reinforced concrete work on this structure was done by Mr. Stanquist, whose wide experience in, and thorough knowledge of concrete construction enabled him to do a good job. The building is the first reinforced concrete office structure to be completed in the business section of San Francisco since the fire. It is considered both earthquake and fireproof. The concrete is not only reinforced with corrugated bars, but it is set in a framework of heavy steel. The concrete decorations of the building show the possibilities of this type of material from an ornamental standpoint. Besides the Flannery building Mr. Stanquist has put up several other substantial structures since the big fire, and he has some nice work in hand at the present time. Concrete and plaster work are his specialties.

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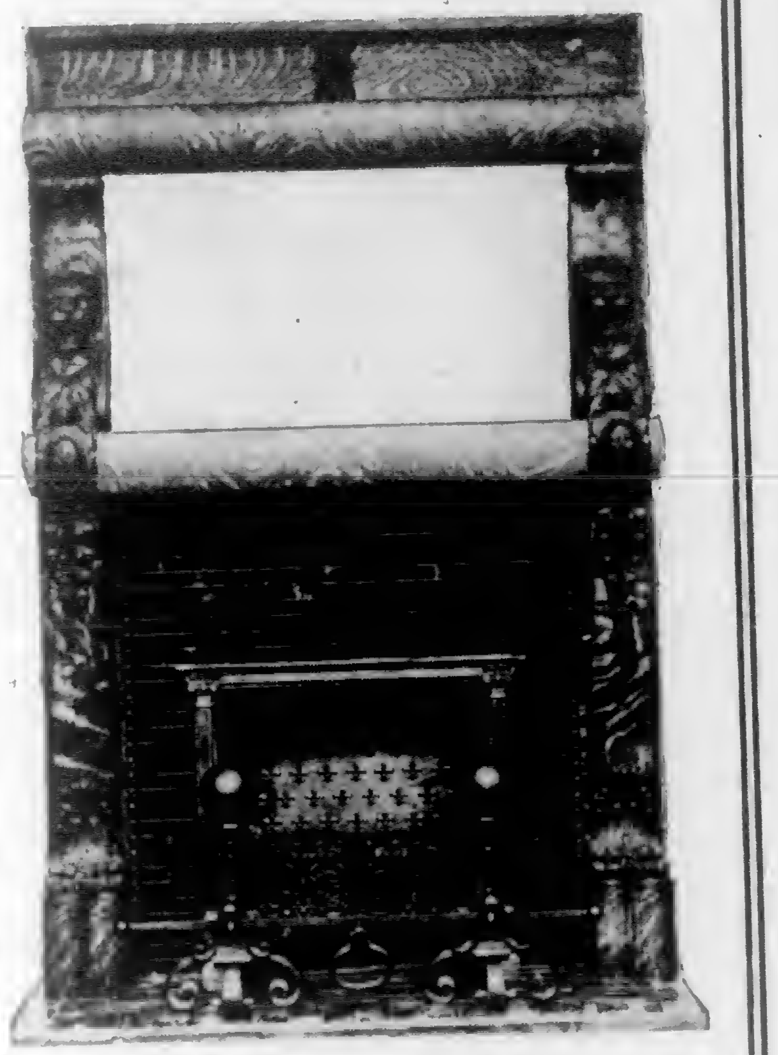

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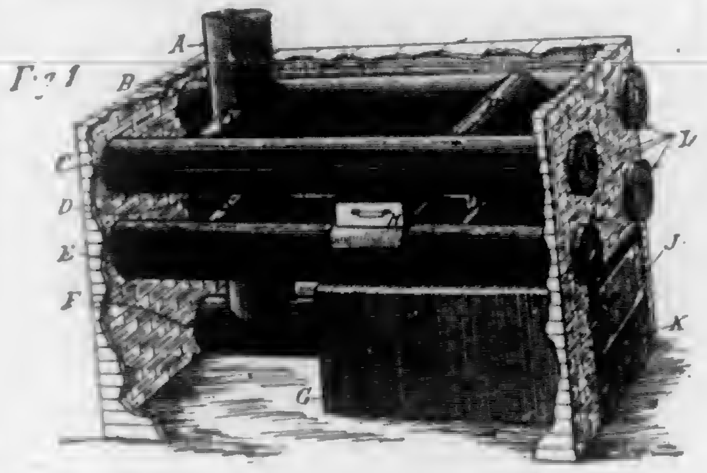

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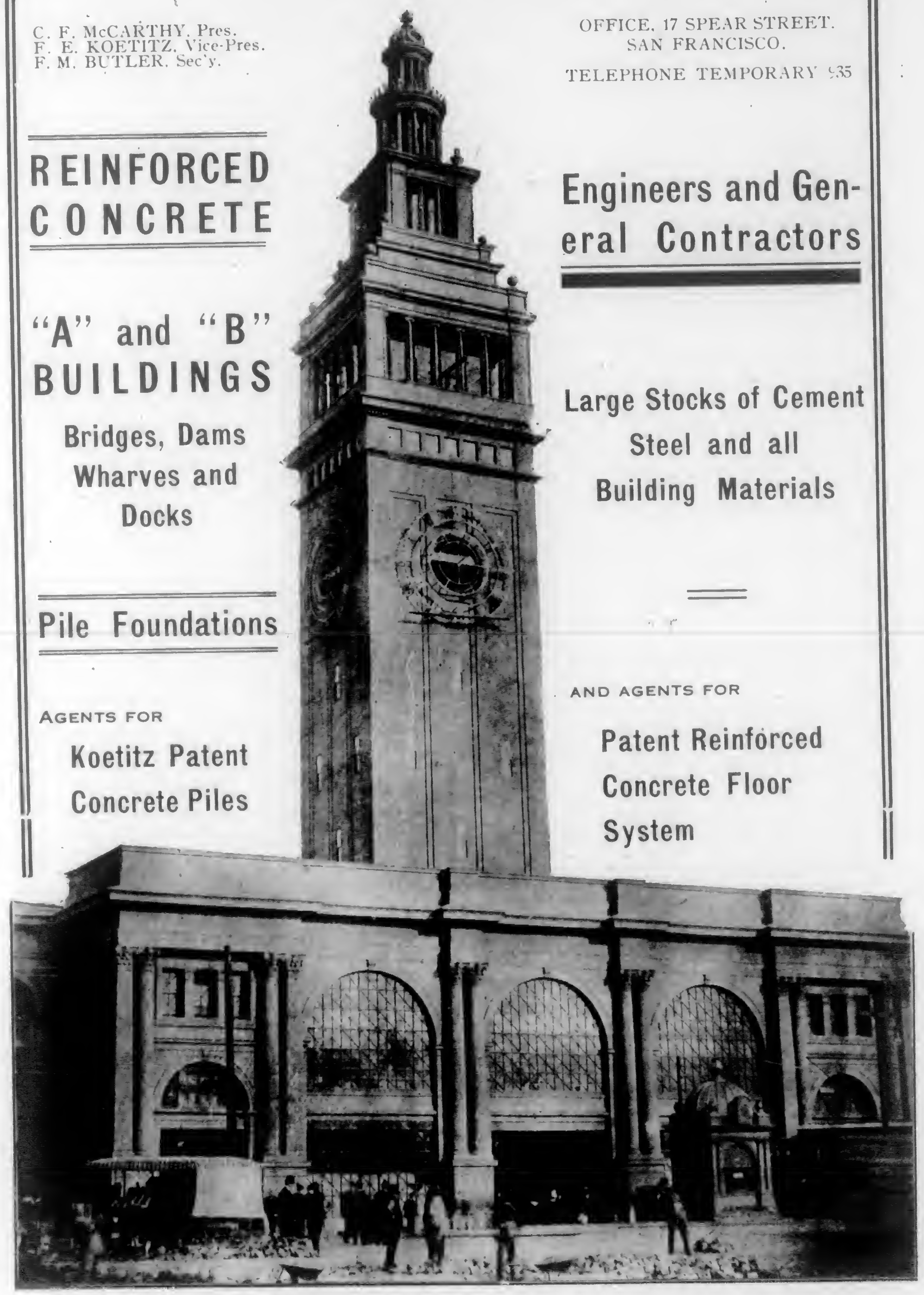

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Bids for Electric Wiring

The Spring Construction Company of Berkeley, builders of the new $1,000,000 hotel at Claremont, are taking bids on electric wiring for the new hotel. The plans are from the office of C. W. Dickey, Oakland, who is also architect for the Sunset Telephone Company's new building at Forty-fifth street and Telegraph avenue, and for which bids are being taken.

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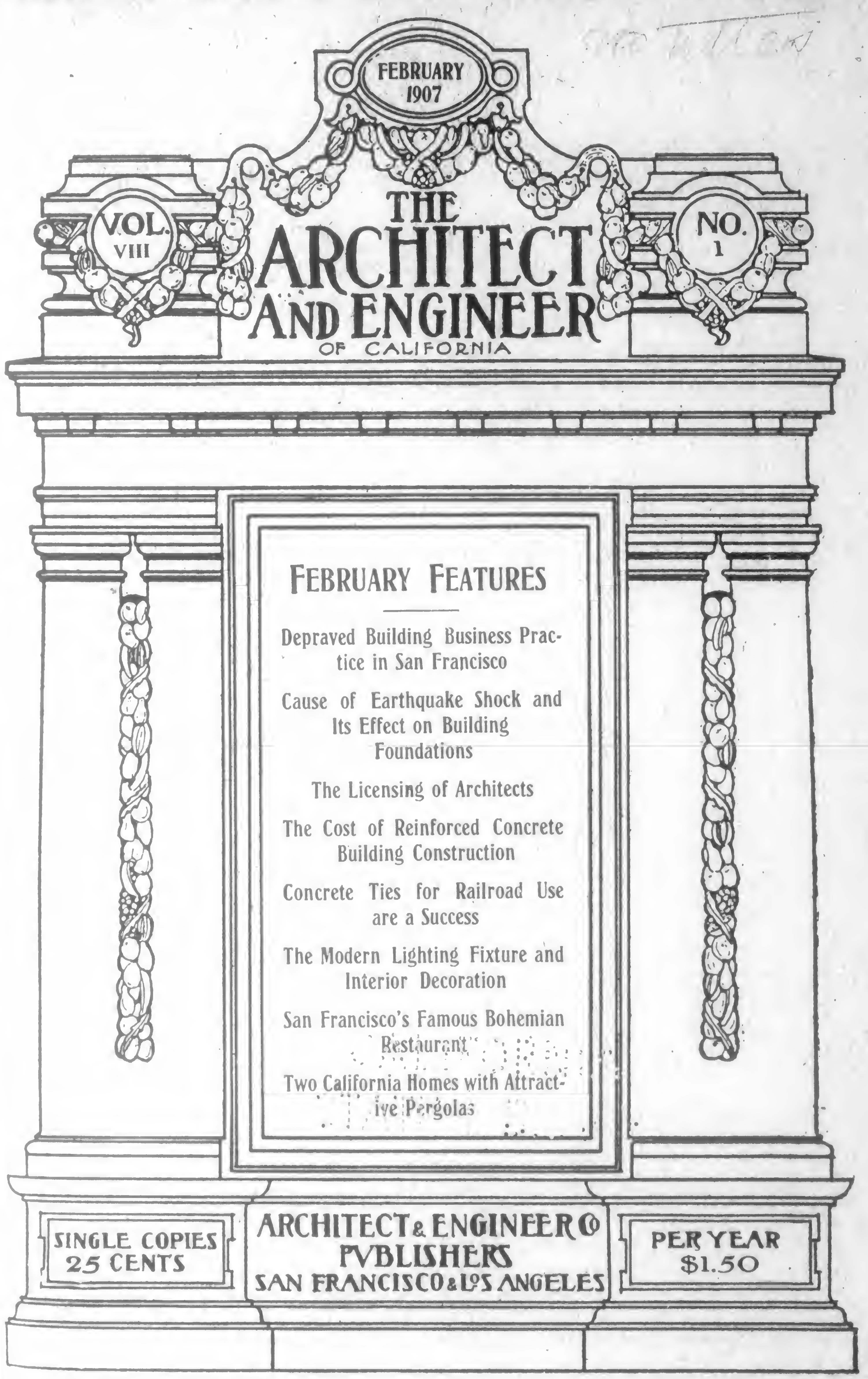

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- The Licensing of Architects
- The Cost of Reinforced Concrete Building Construction
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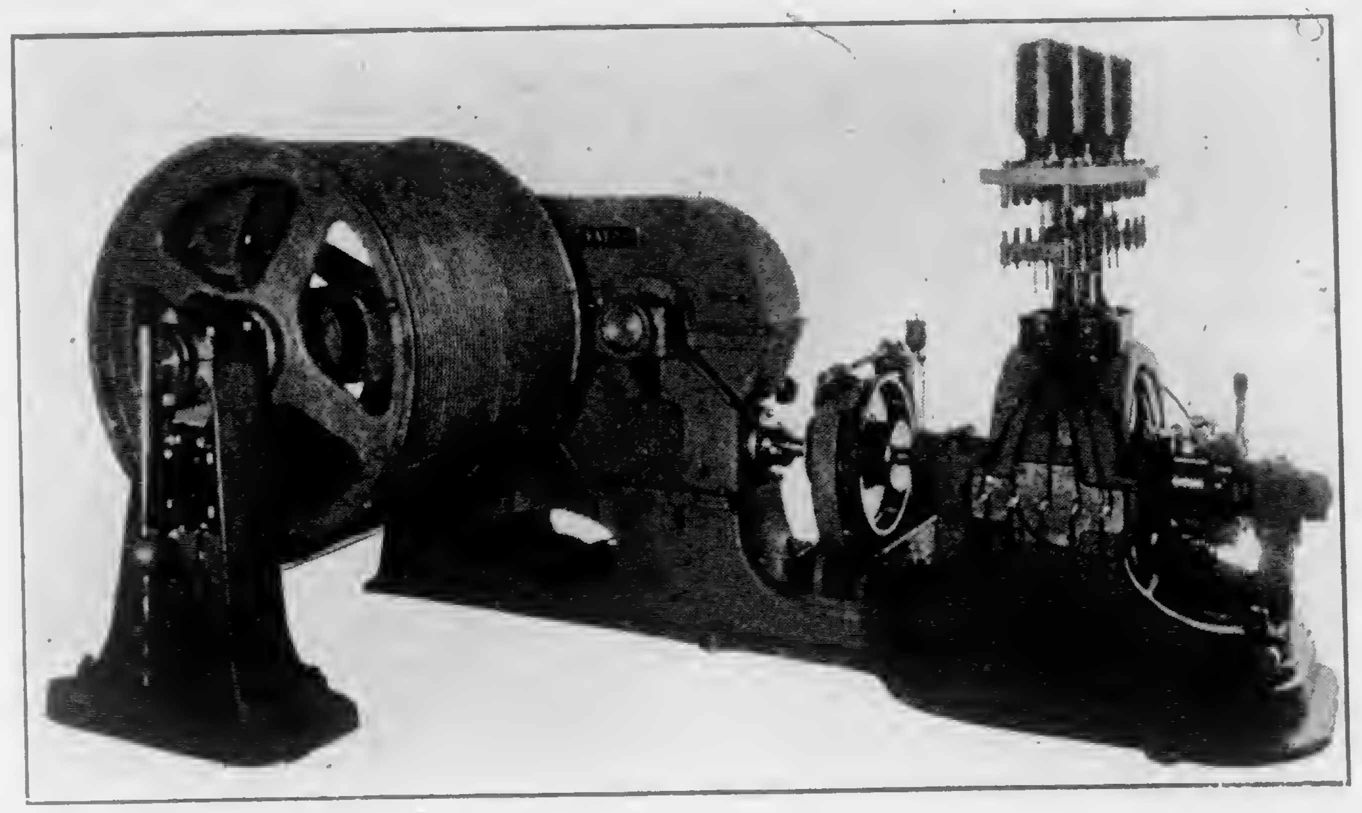

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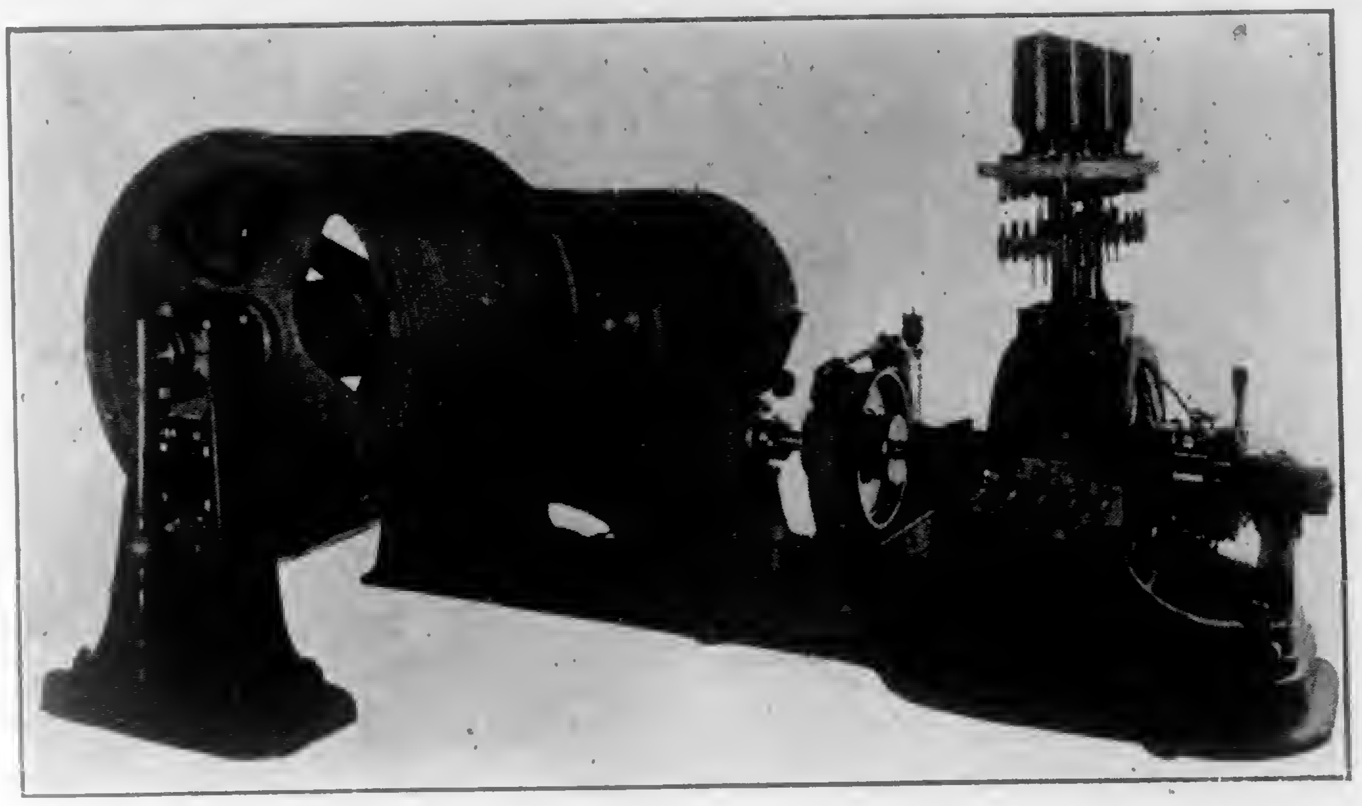

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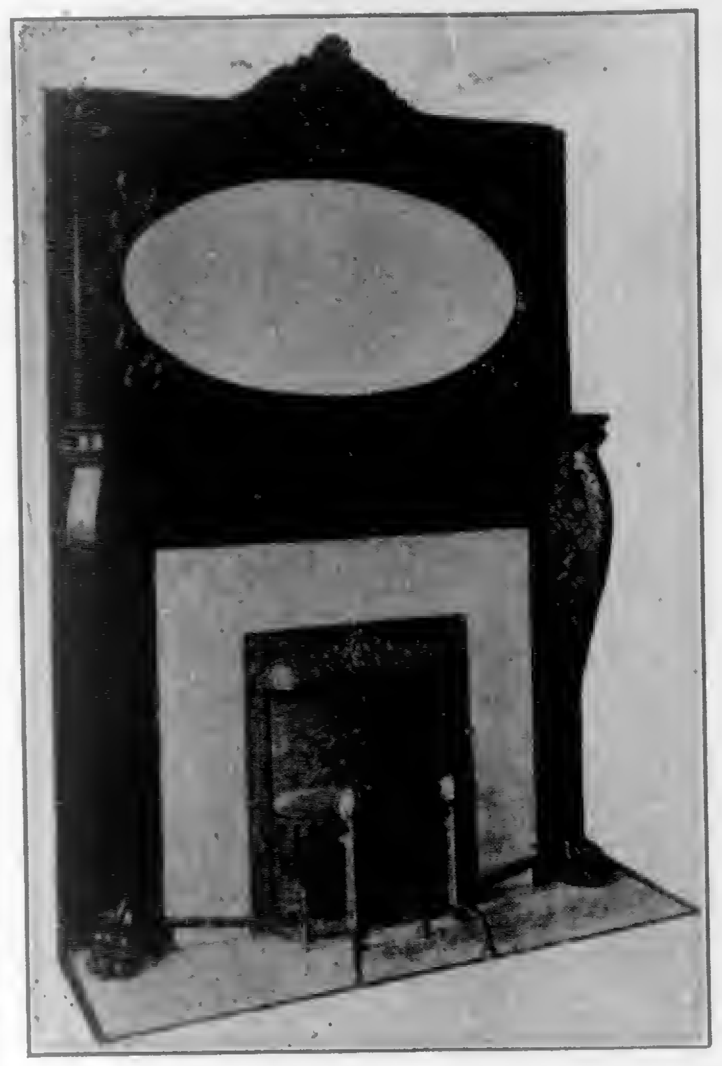

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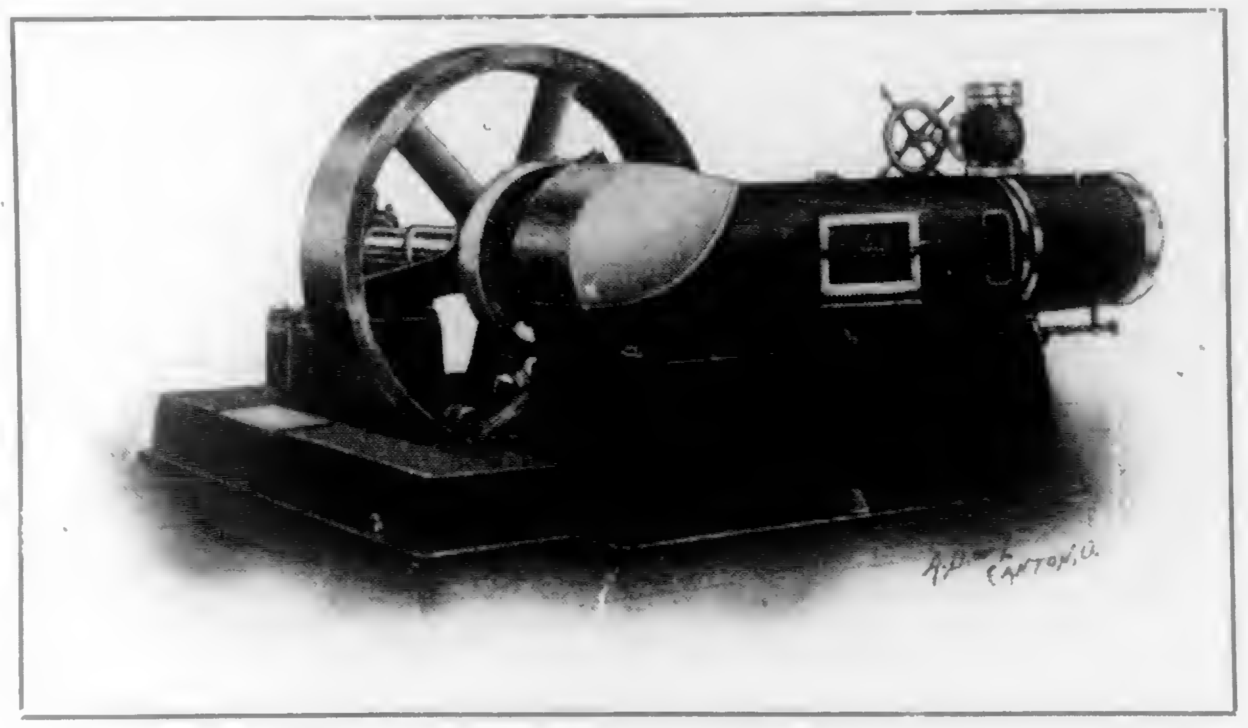

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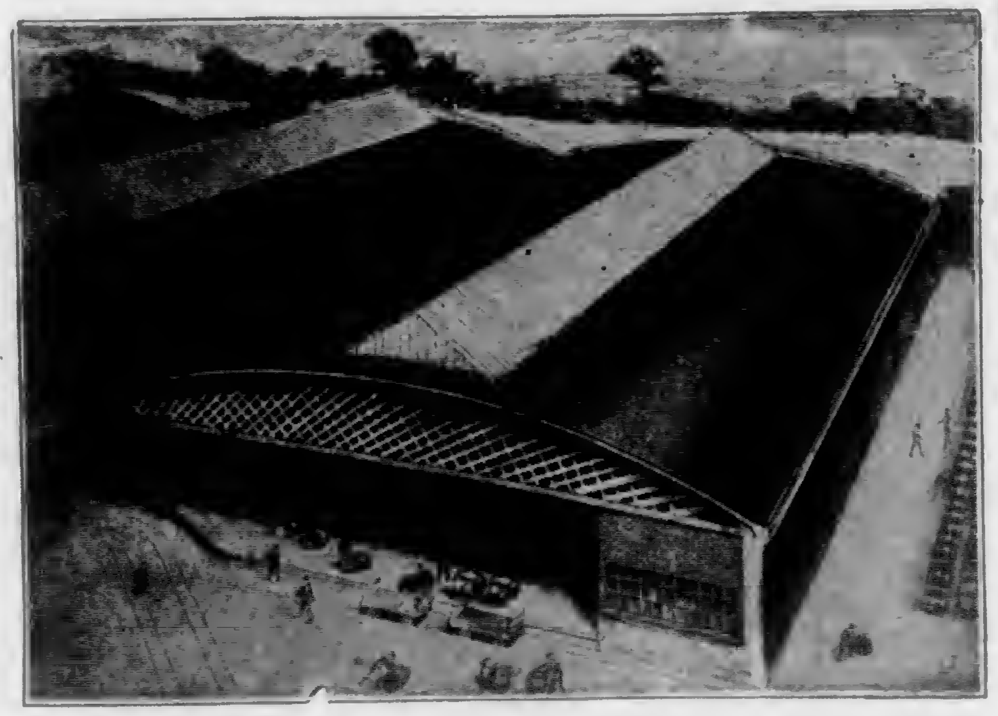

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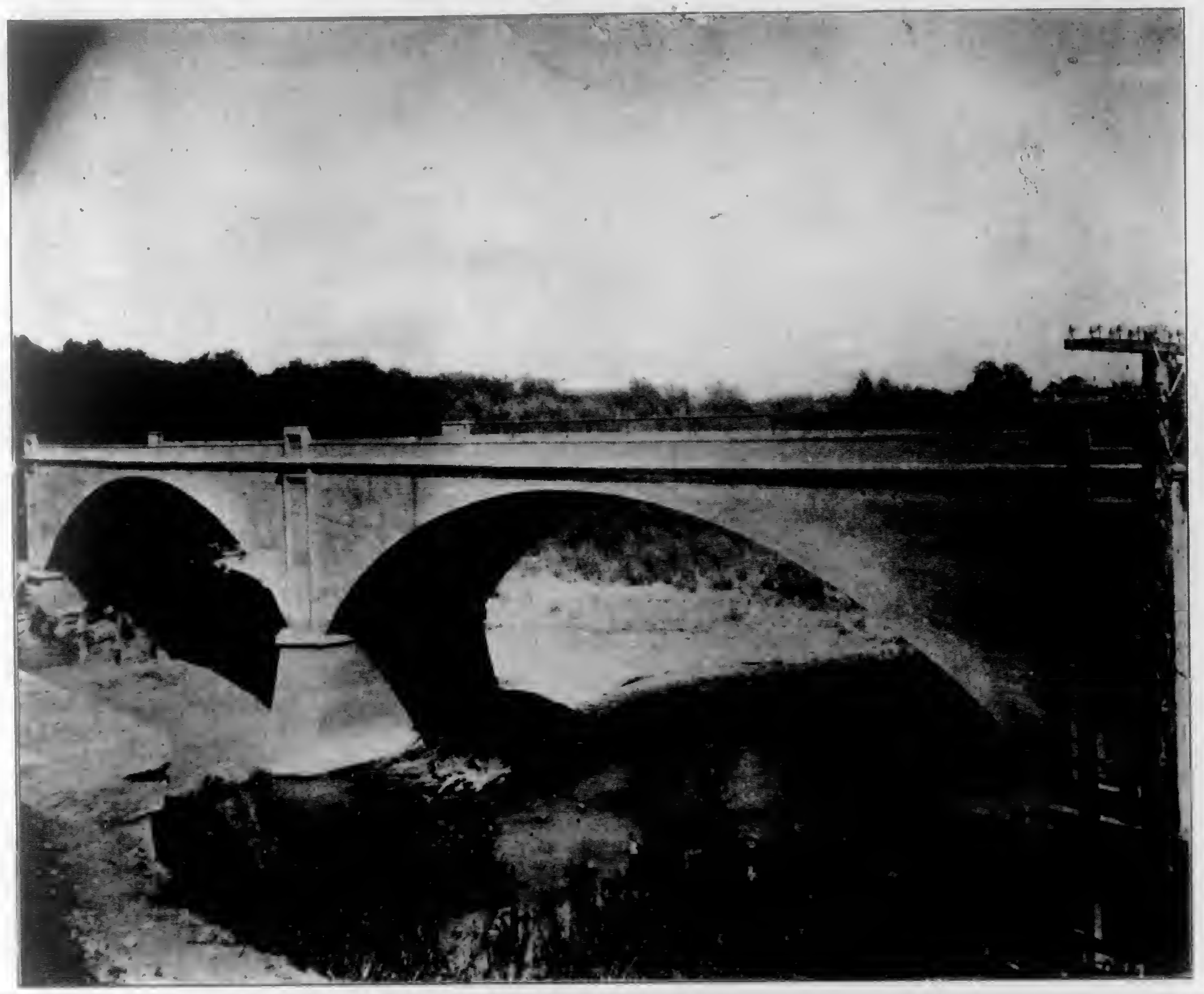

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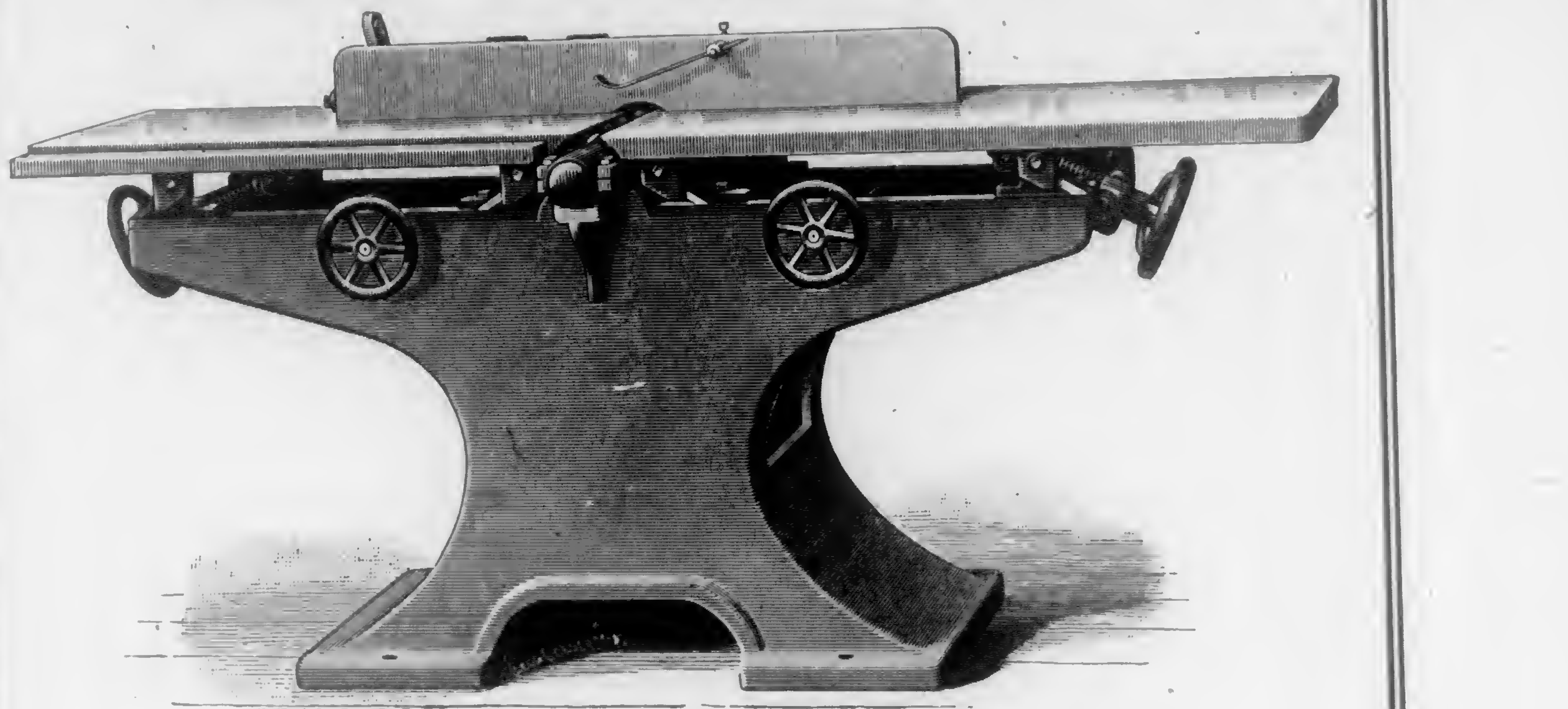

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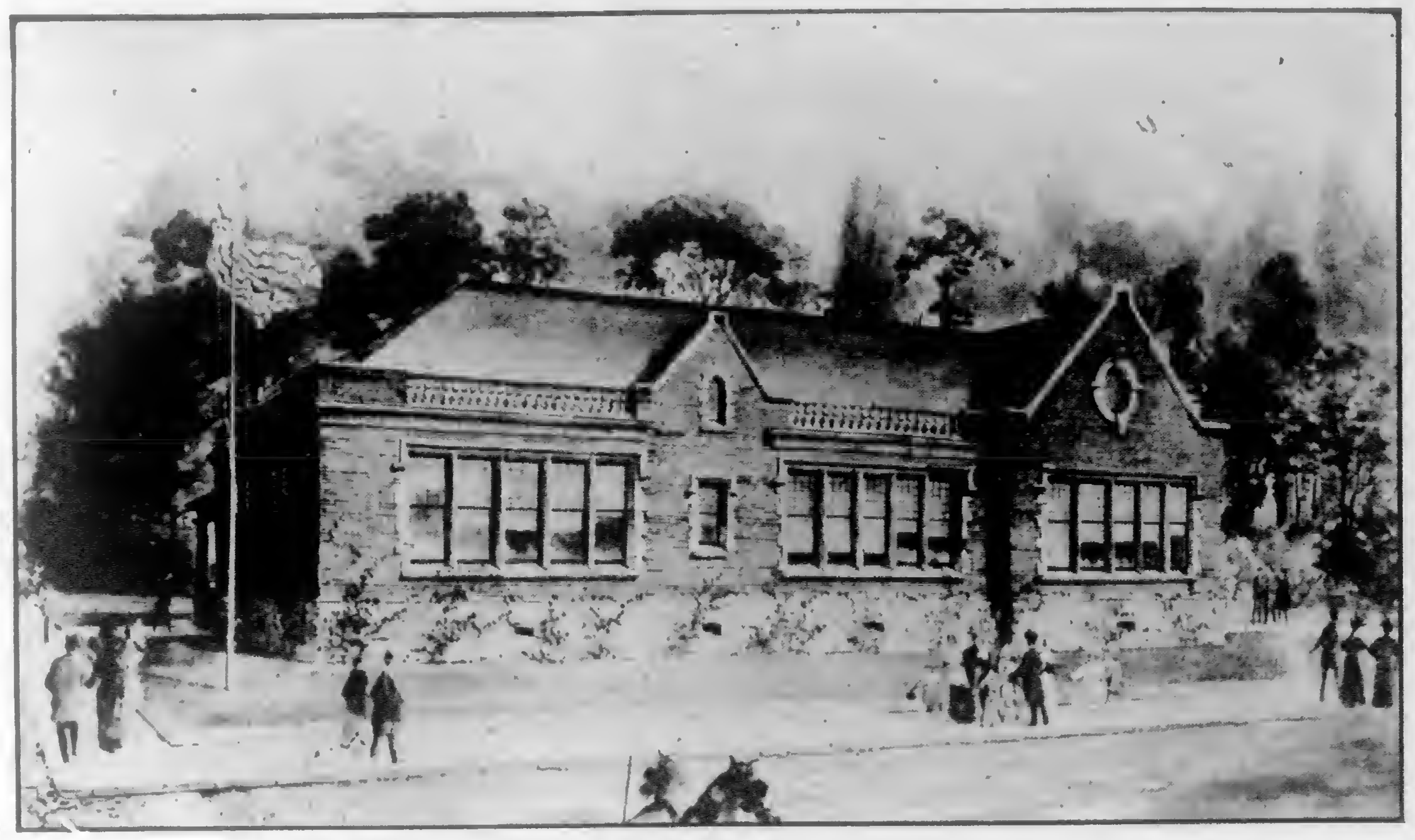

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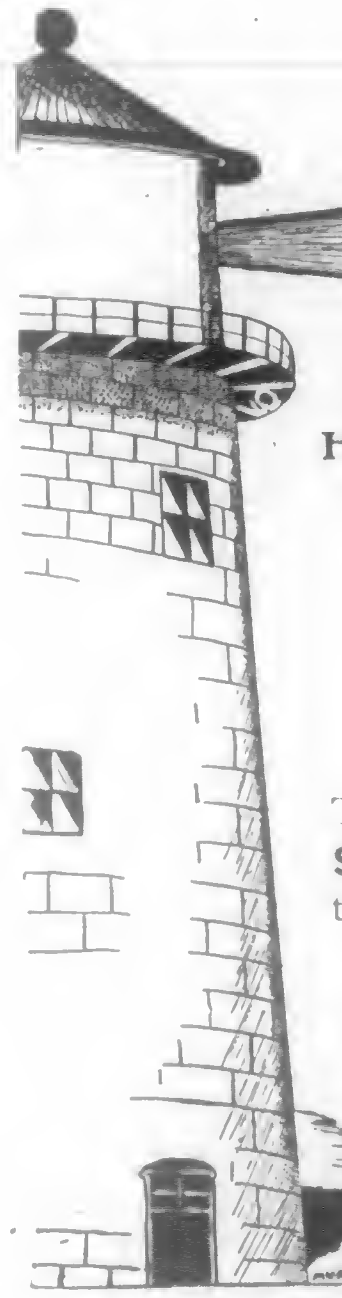

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Wash Drawing of House in Berkeley for Mrs. Beaver William Knowles, Architect

THE
Architect and Engineer
Of California

Vol. VIII. FEBRUARY, 1907. No. 1.

Two California Homes With Attractive Pergolas

THE pergola is coming to be a popular feature of residence building in California. Many of the fine homes recently constructed, or now being planned, are distinguished by the pergola, either in modest or pretentious form.

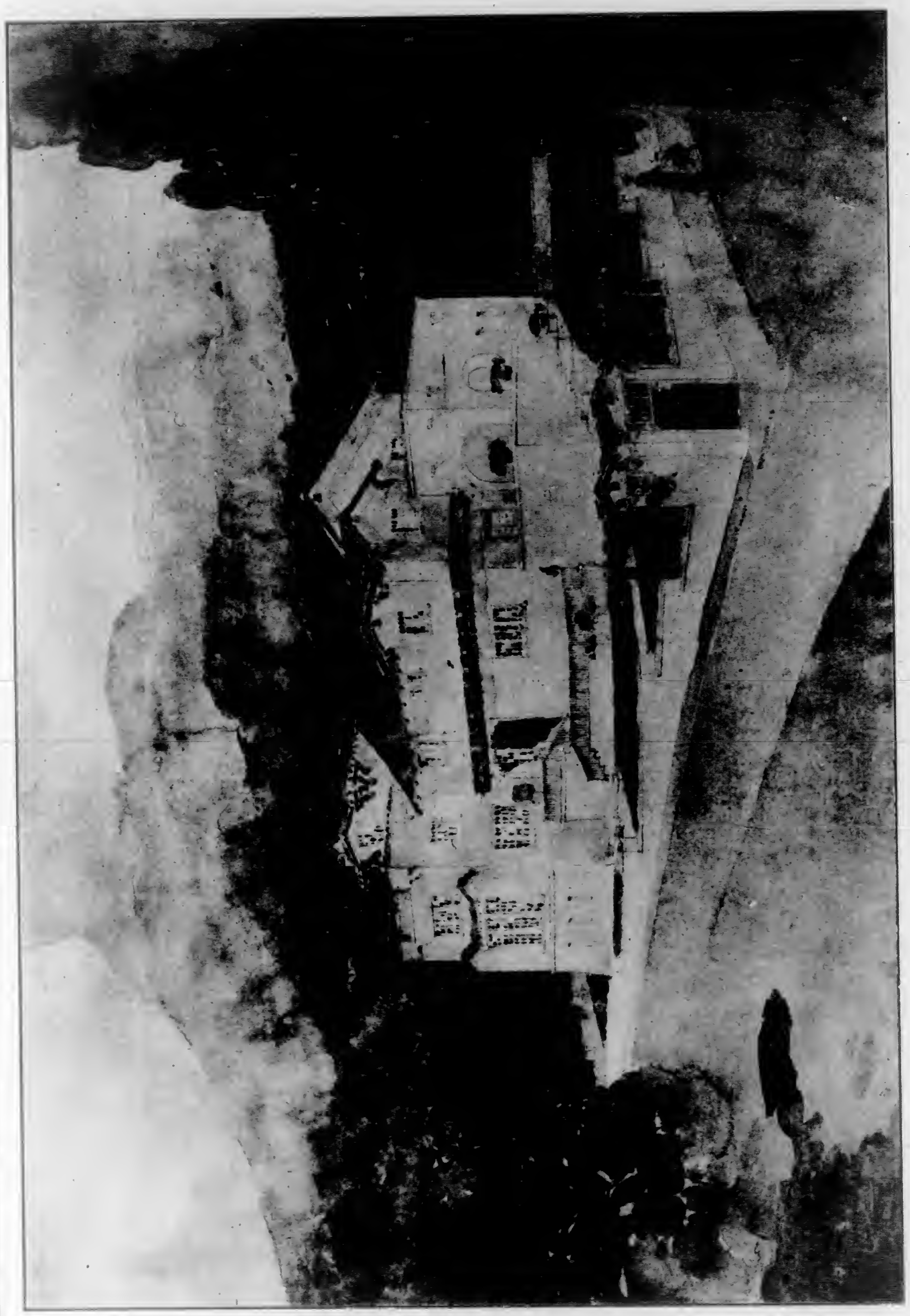
A house that is just now attracting much attention is that recently completed at Alta Piedmont for Mr. R. L. Johns. It occupies a commanding position on what is known as the Scenic Road, and overlooks from the highest point in Alta Piedmont the beautiful Marin county hills, the Golden Gate, San Francisco and the picturesque Santa Clara valley.

The house is quite original in design, and the architect, William Knowles, has succeeded in accomplishing a feat in architecture not easily achieved. A lofty tower of five stories, which seemed at first impossible to treat architecturally on account of its extreme height, has been handled by giving it a good width and breaking up the facade with a series of balconies, and extending the pergola to the south, making a long horizontal base line that was needed in the composition.

Some Gothic detail in the windows and tower and the introduction of the trefoil detail on the buttresses of the piazza give the house quite a feeling of the Venetian Gothic.

The house is of frame construction with plastered exterior, and contains fifteen rooms. A feature of the interior is the music room with Gothic pointed windows projecting into a domed ceiling. The tower makes the dome in this room possible, giving space for the vaulted ceiling. The dining room is done in light yellow cedar and old gold paper with gold gauze hangings. The cost of the house was about $15,000.

Architect J. Cather Newsome has introduced the pergola quite picturesquely in a Mission residence design. Several photographs of this house, which is in Los Angeles, are shown.



Wash Drawing of House in Berkeley for Mrs. Beaver *William Knowles, Architect*

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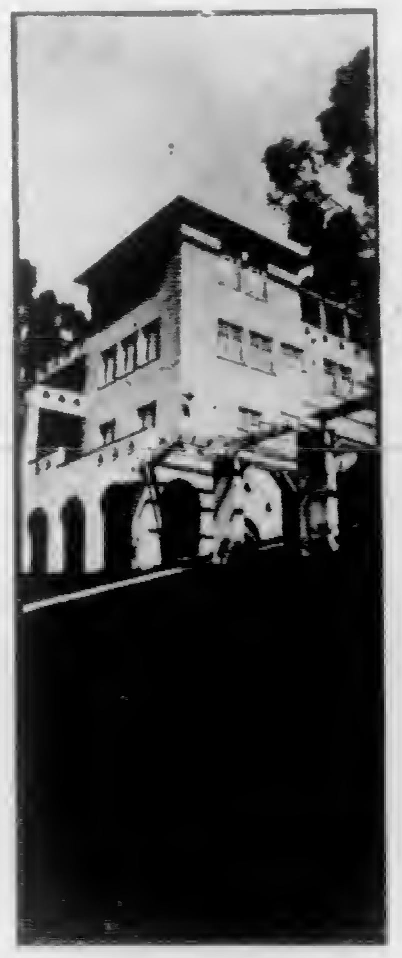

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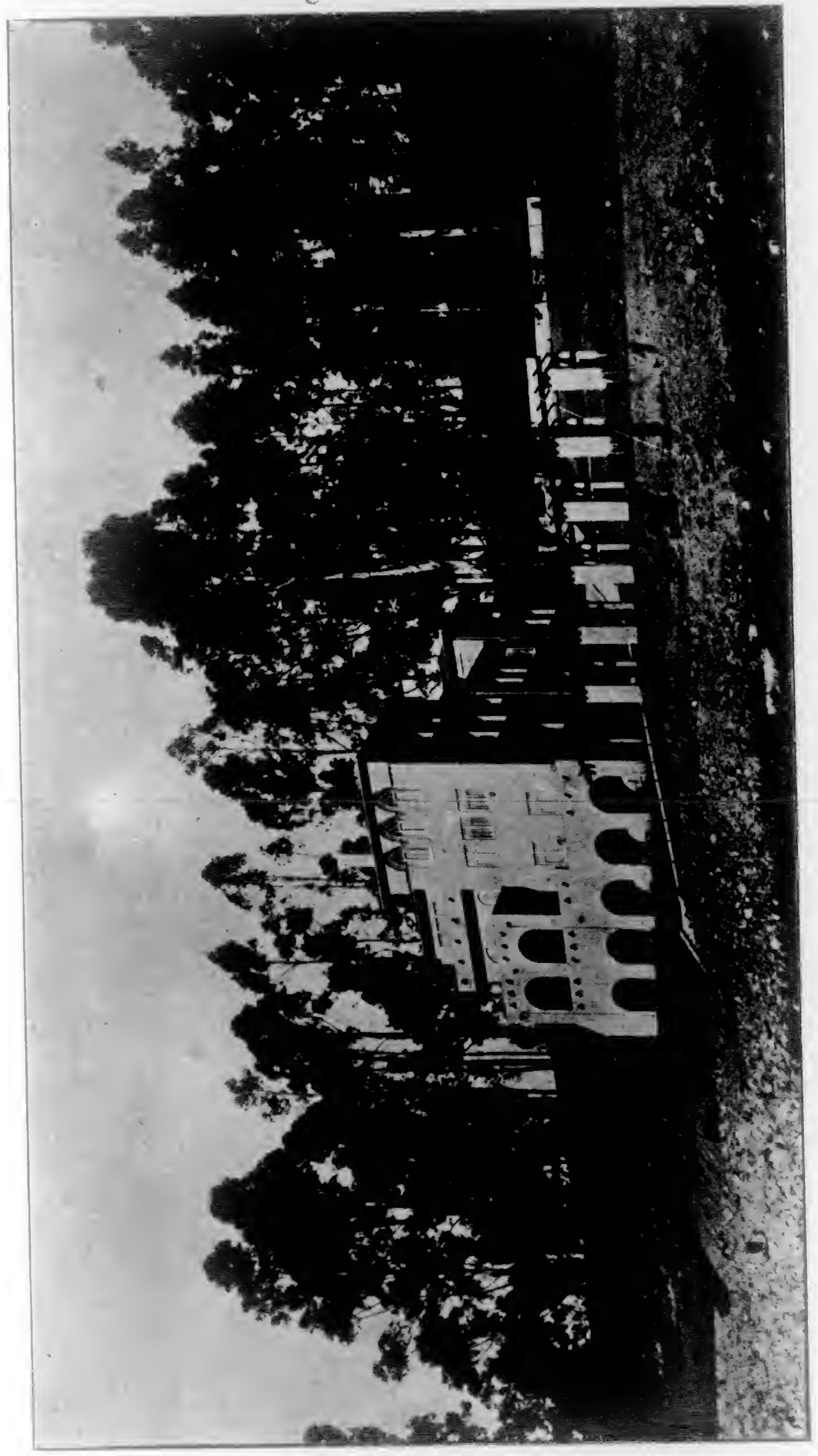

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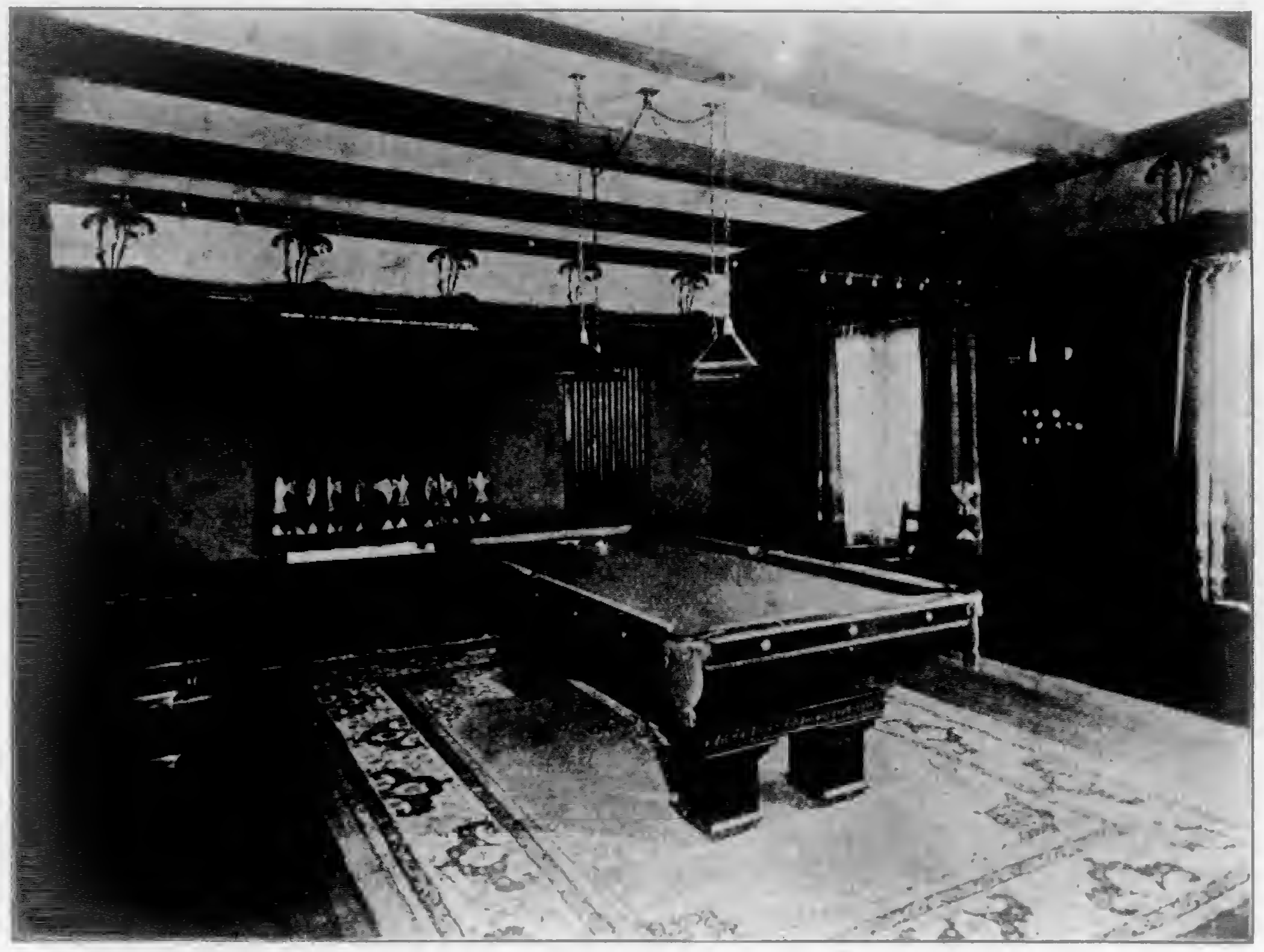
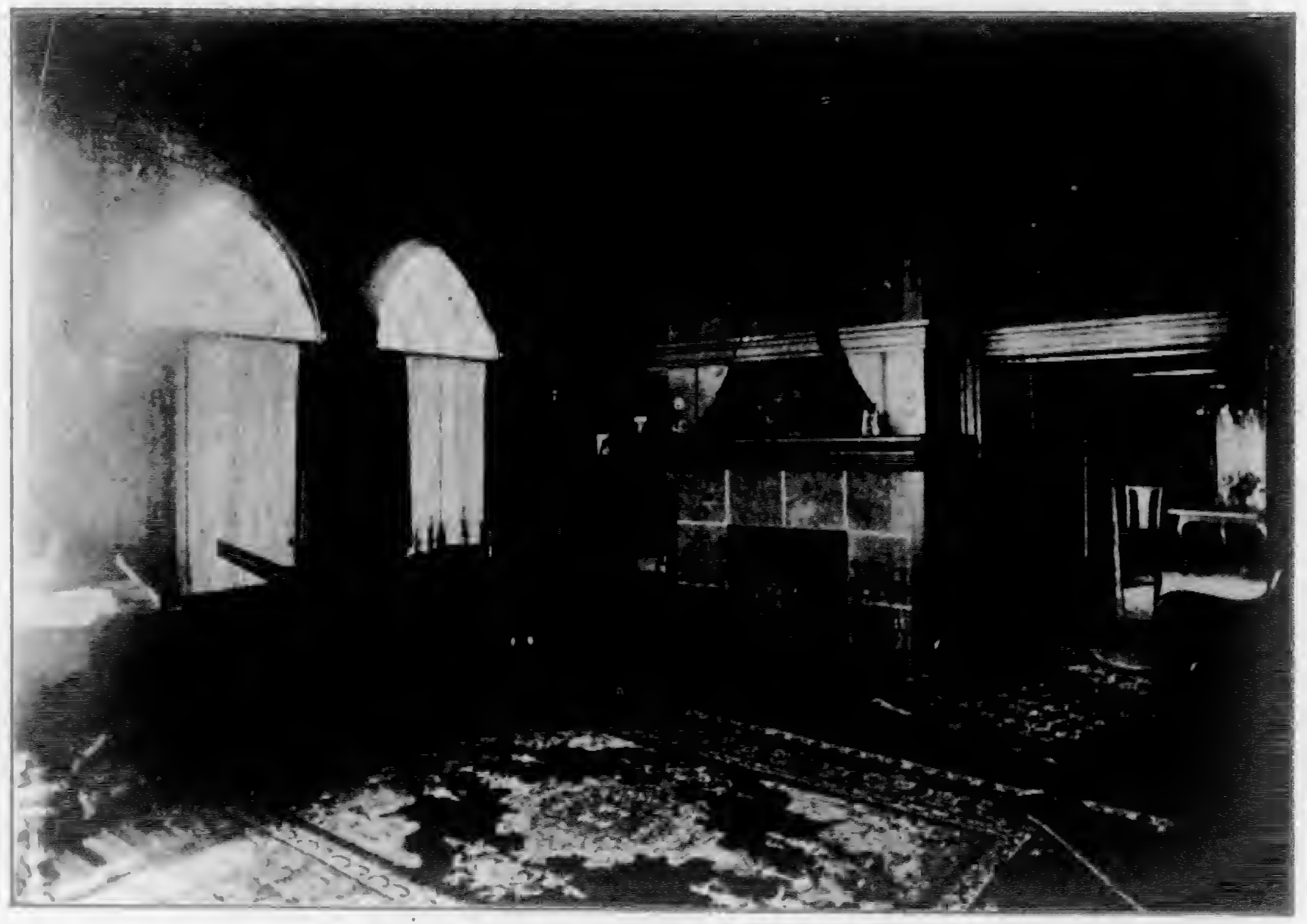
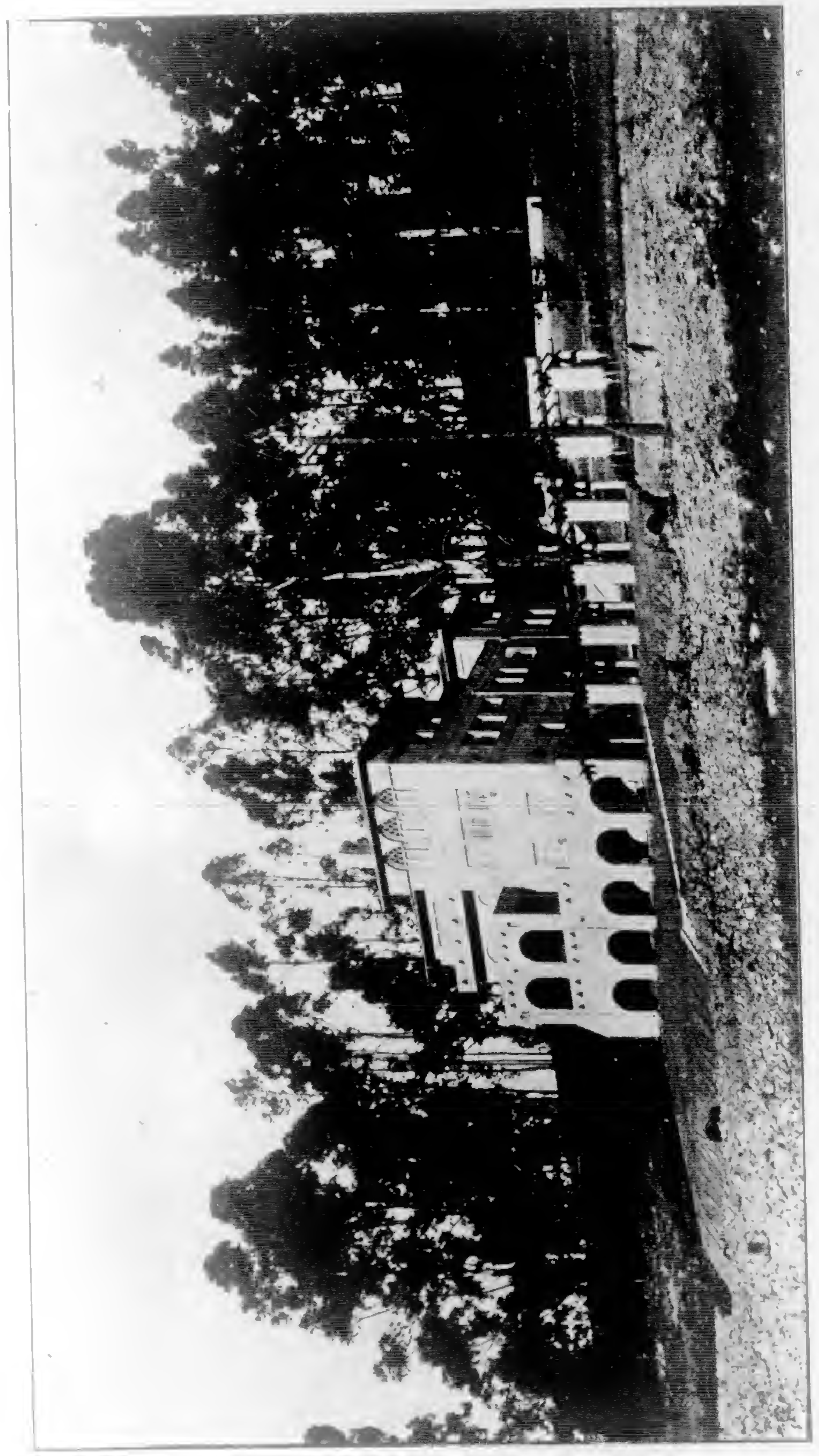
William Knowles, Architect



Billiard Room in Residence of Mr. R. L. Johns, Piedmont
William Knowles, Architect



Corner of Music Room in Residence of Mr. R. L. Johns, Piedmont
William Knowles, Architect



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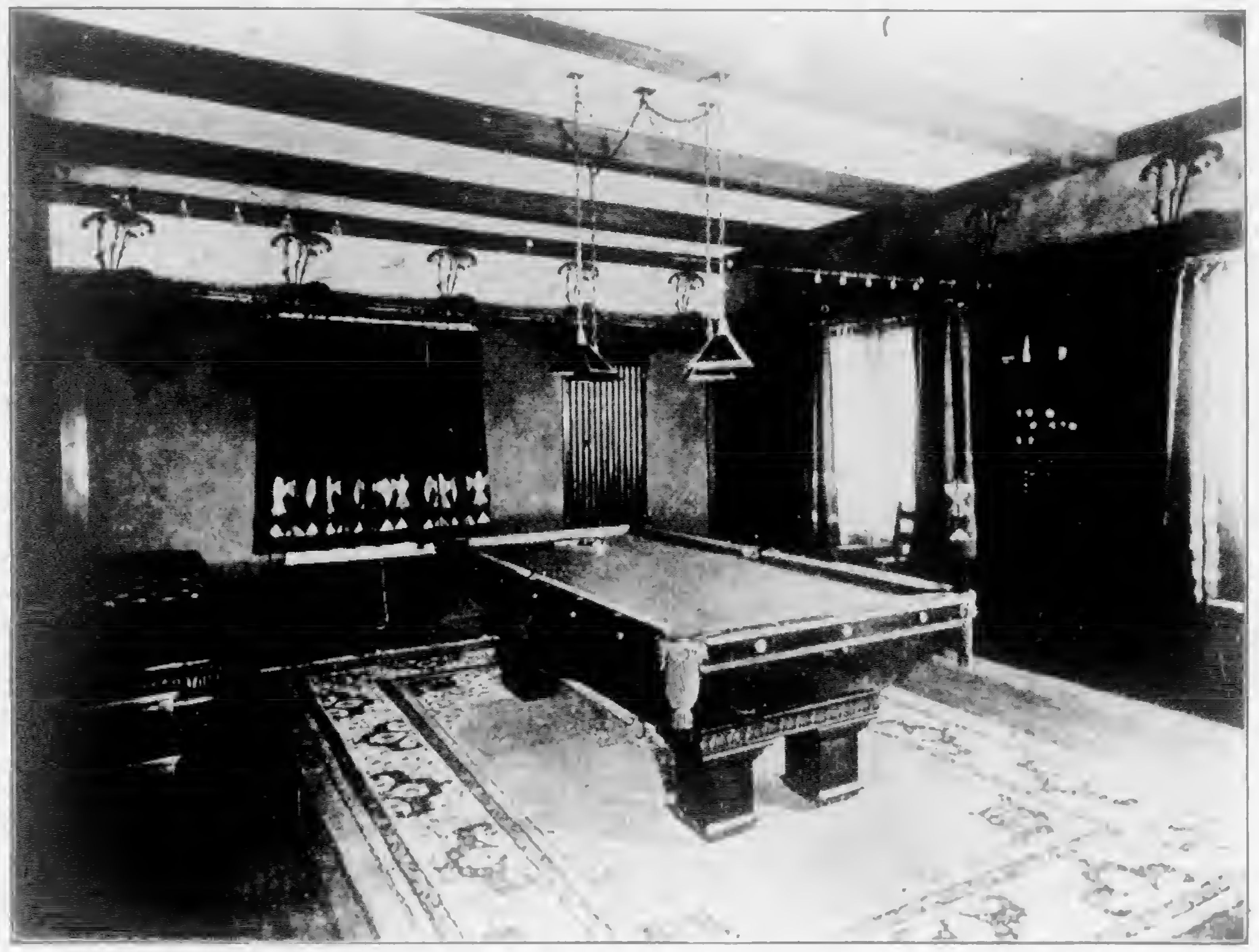

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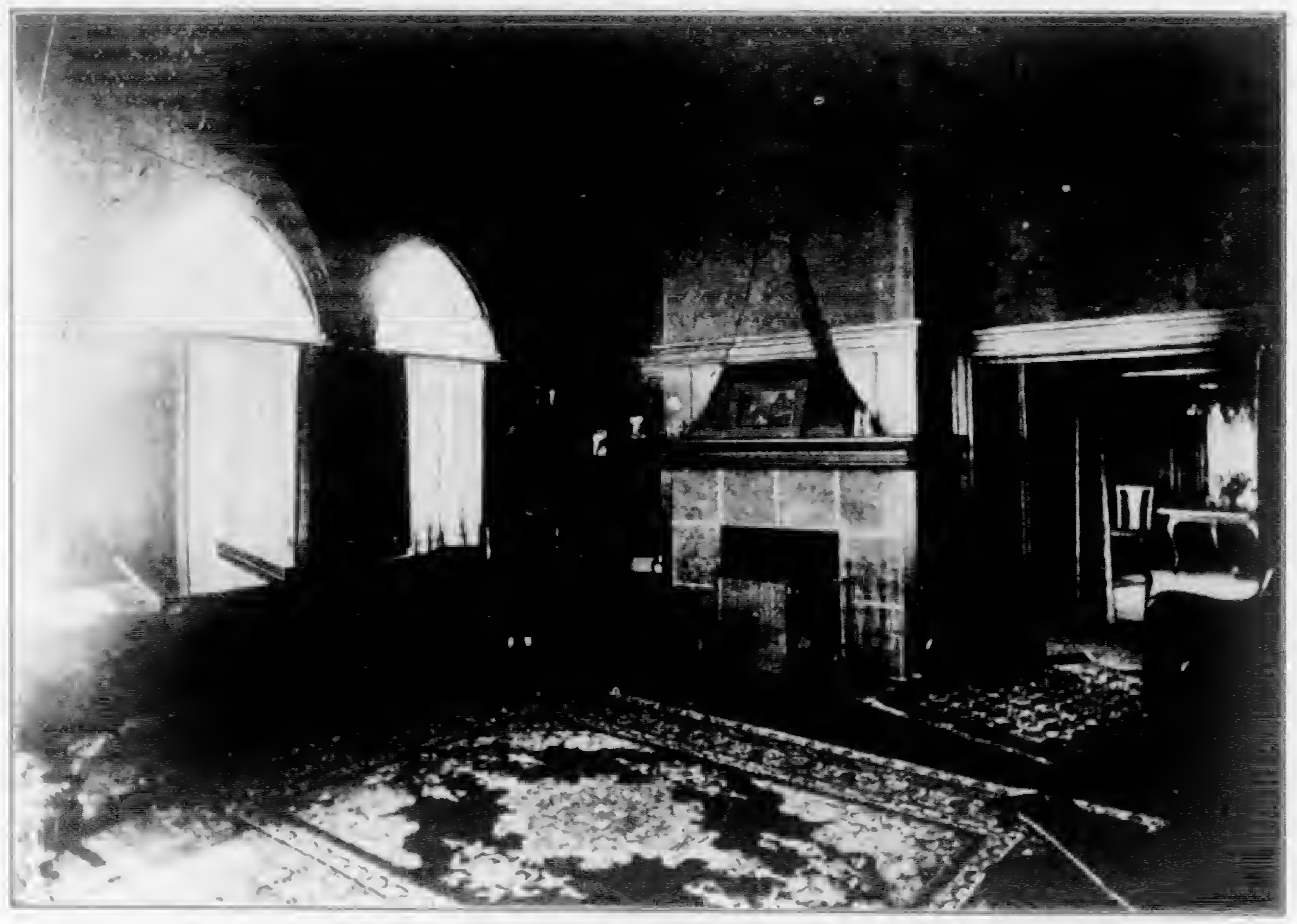

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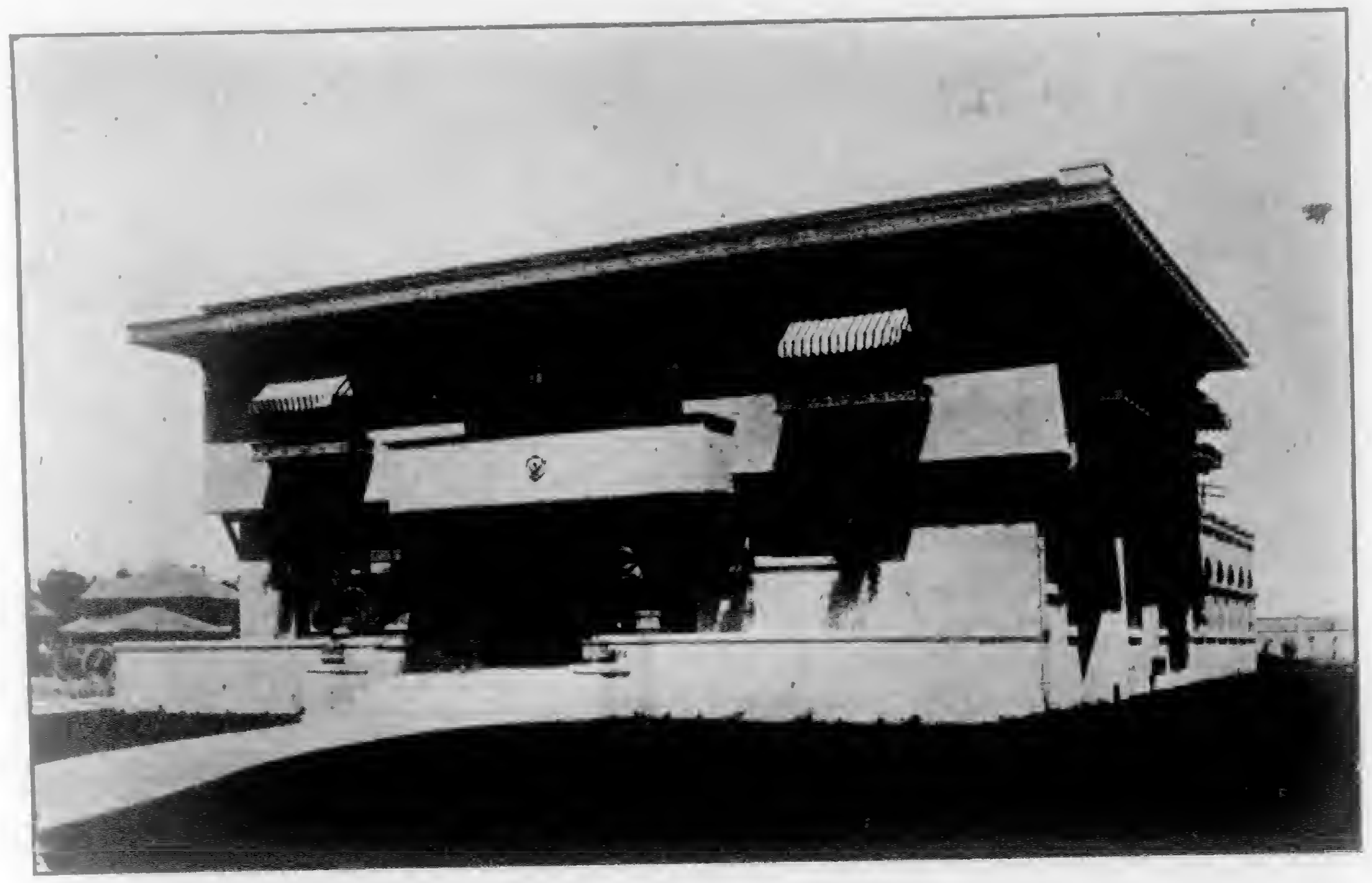

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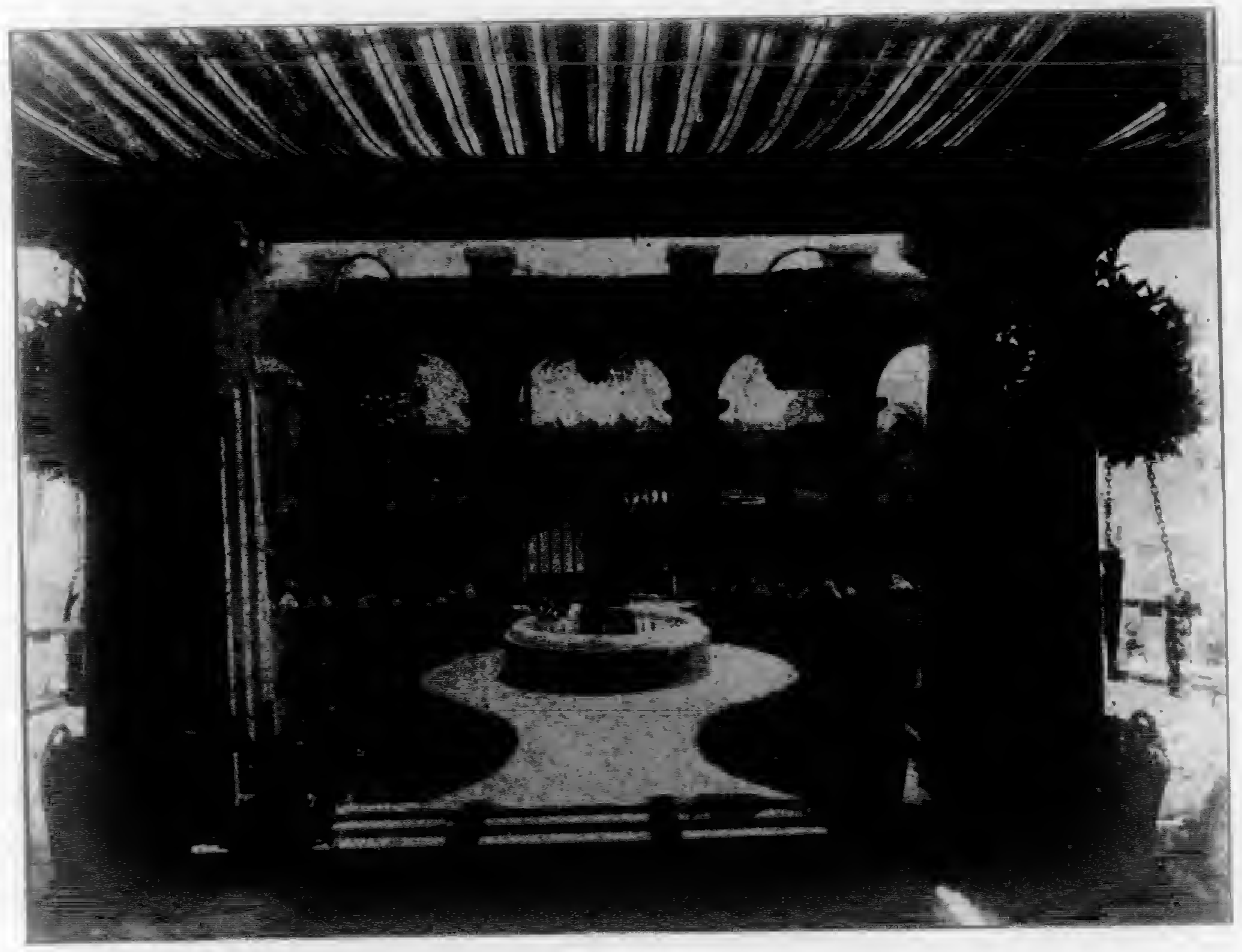
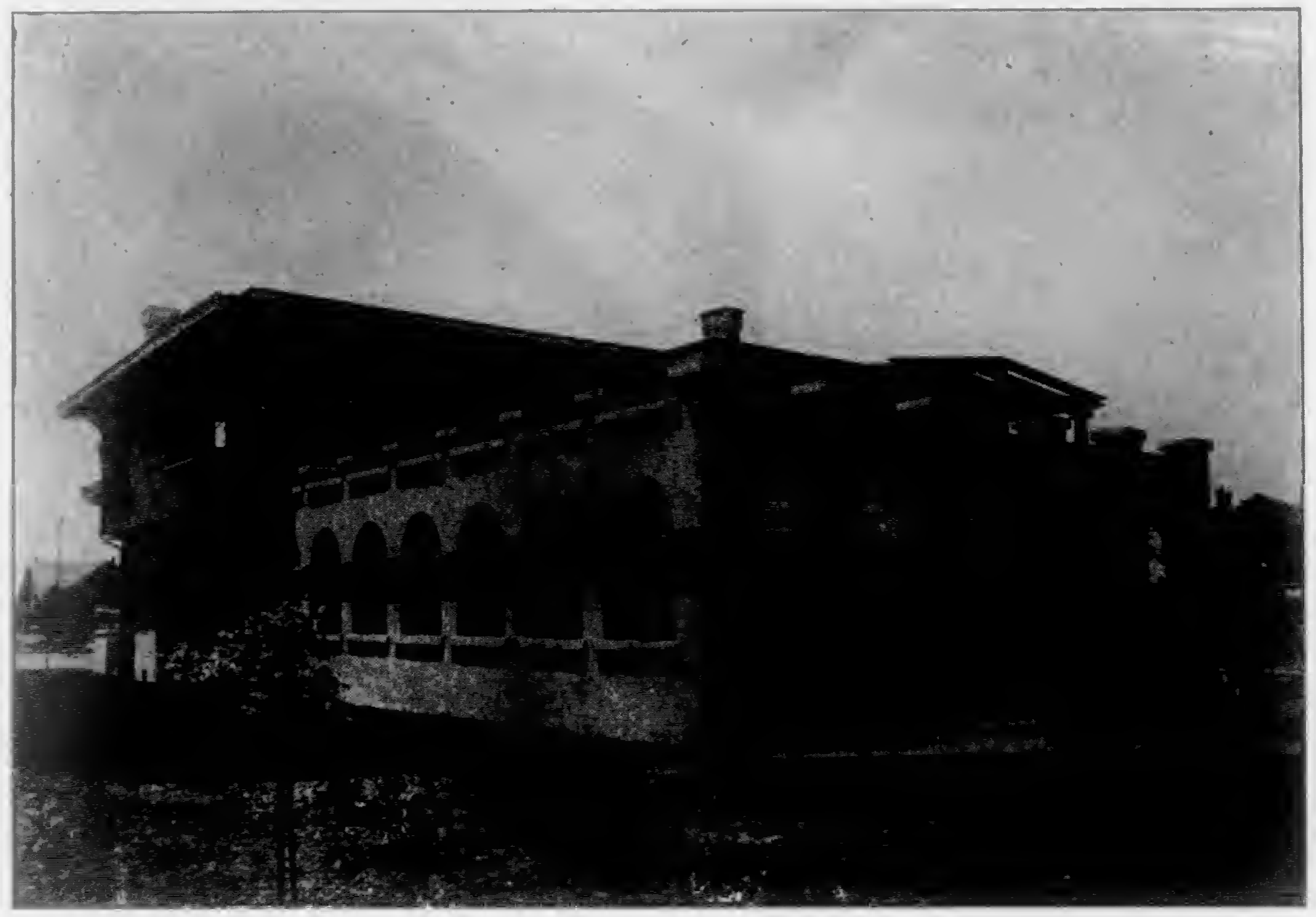
J. C. Newsome, Architect



Garden and Pergola, Residence of Mrs. Joseph Faxton, Los Angeles
J. C. Newsome, Architect



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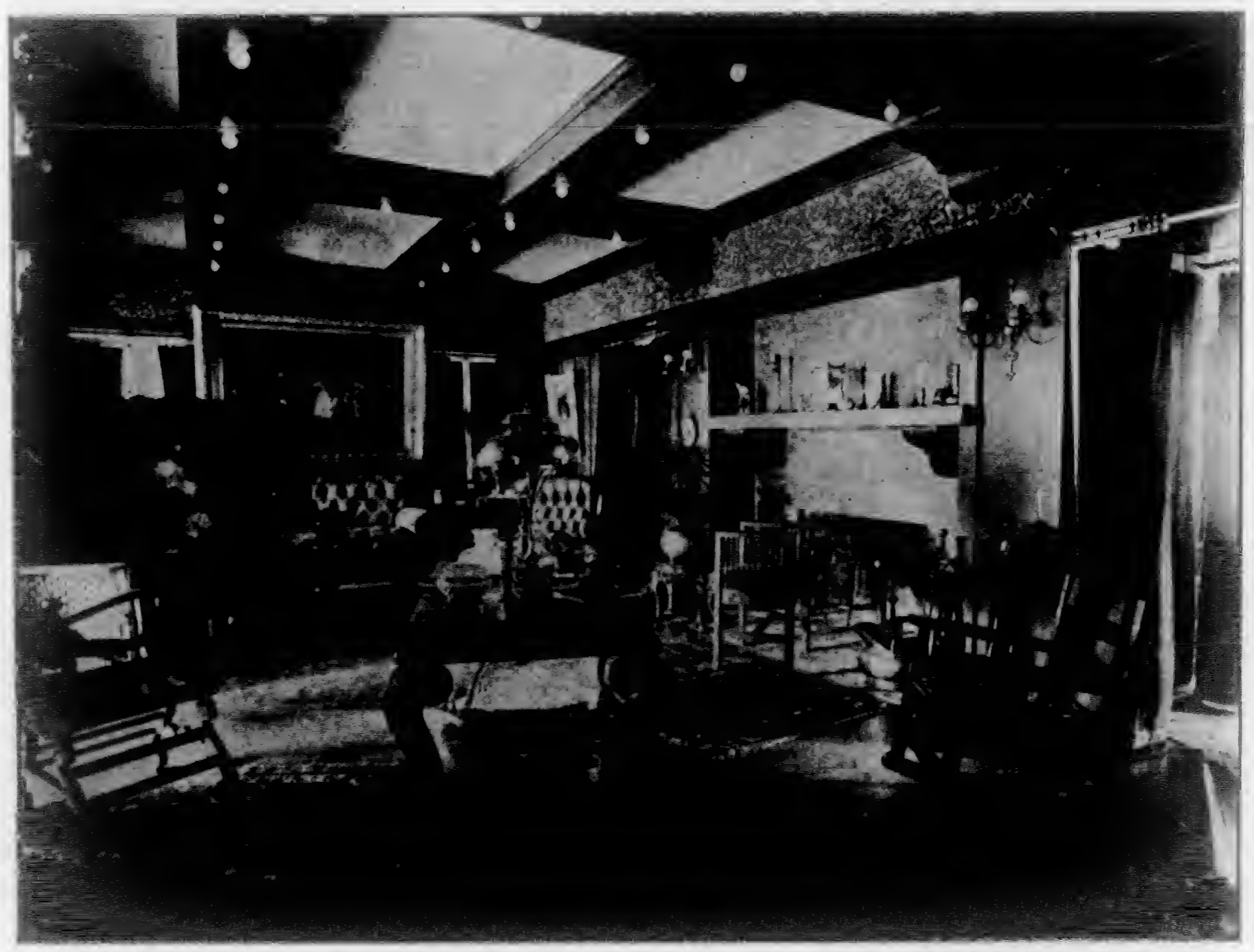
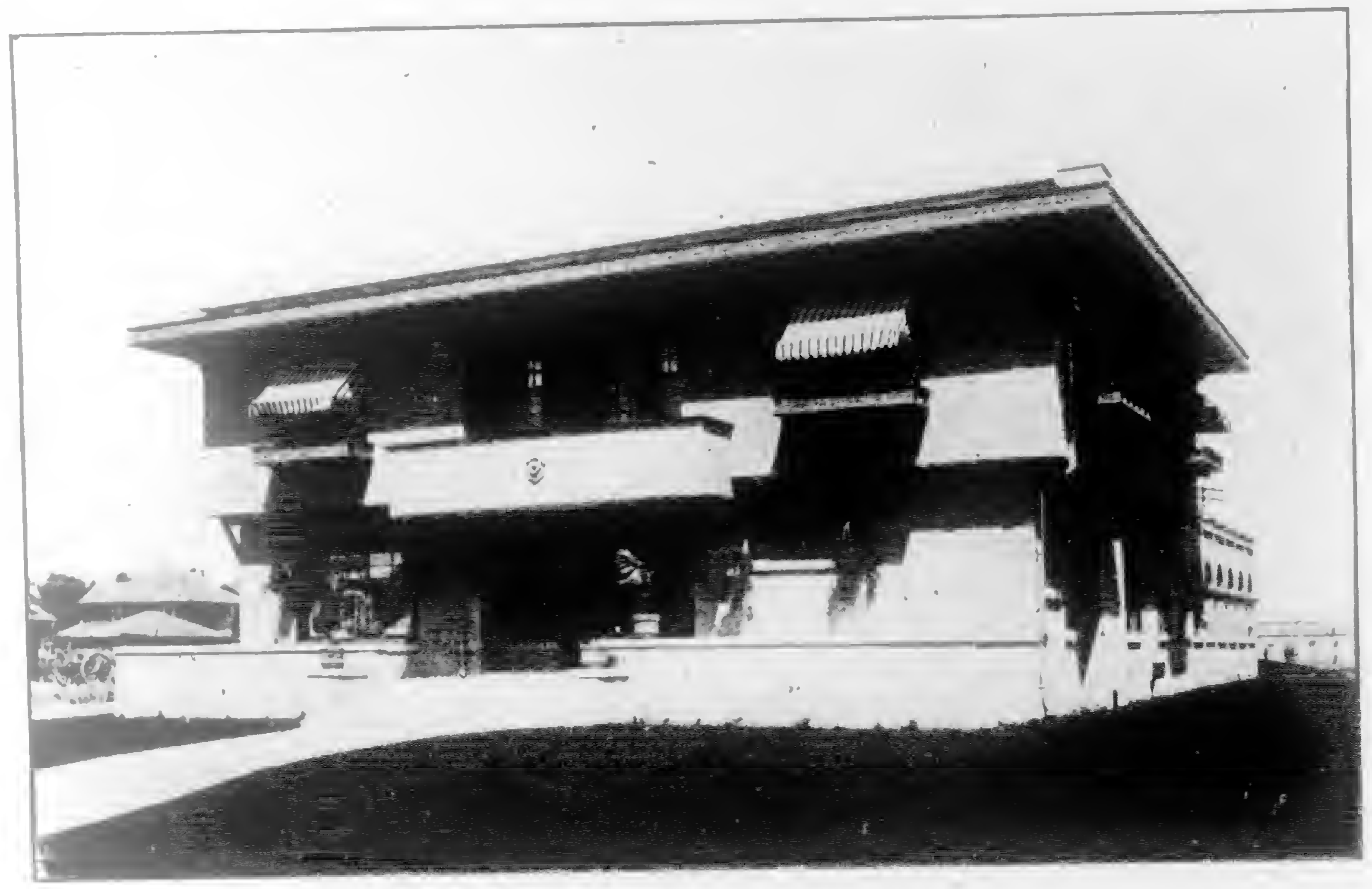


Living Room, Residence of Mrs. Joseph Faxton, Los Angeles
J. C. Newsome, Architect



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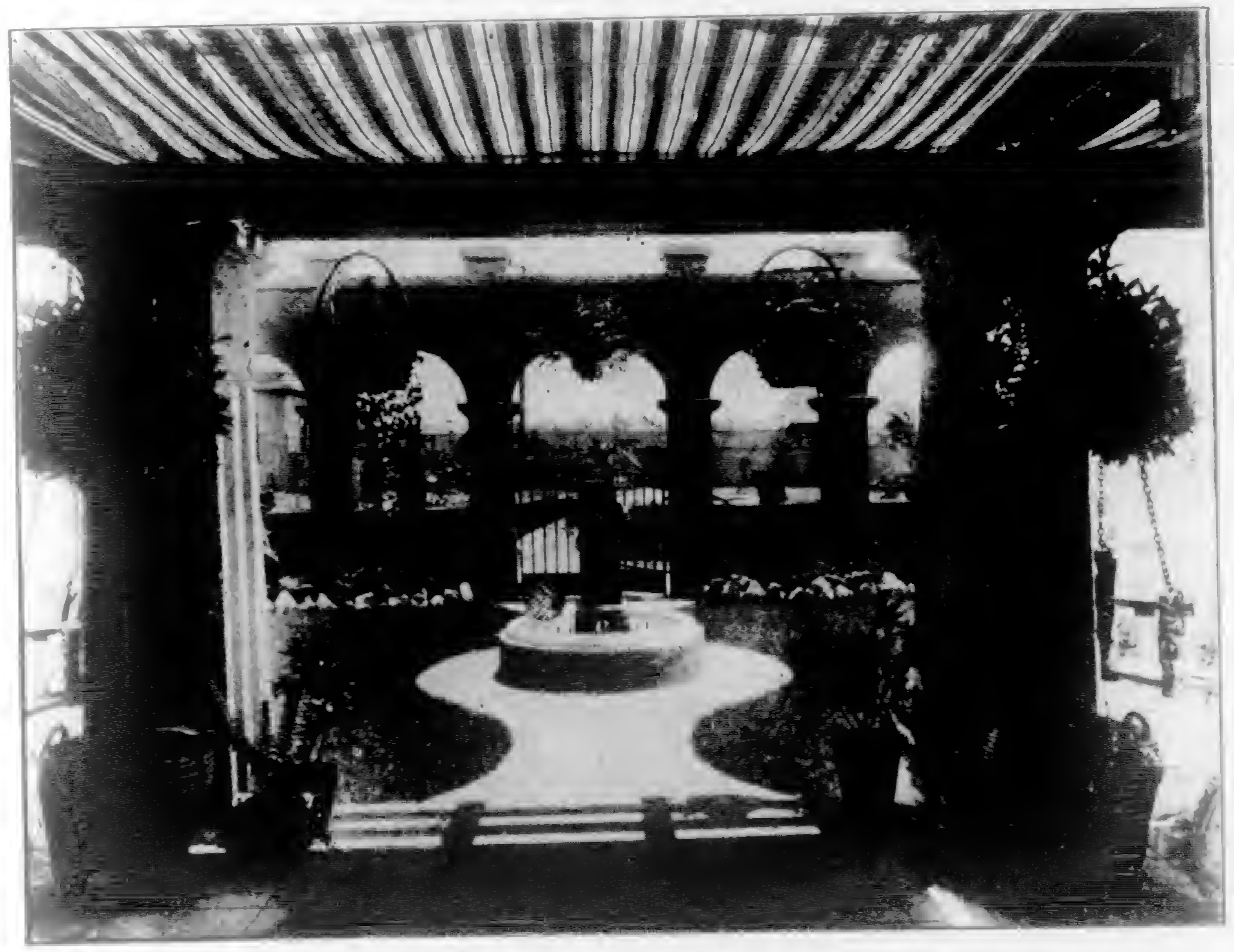

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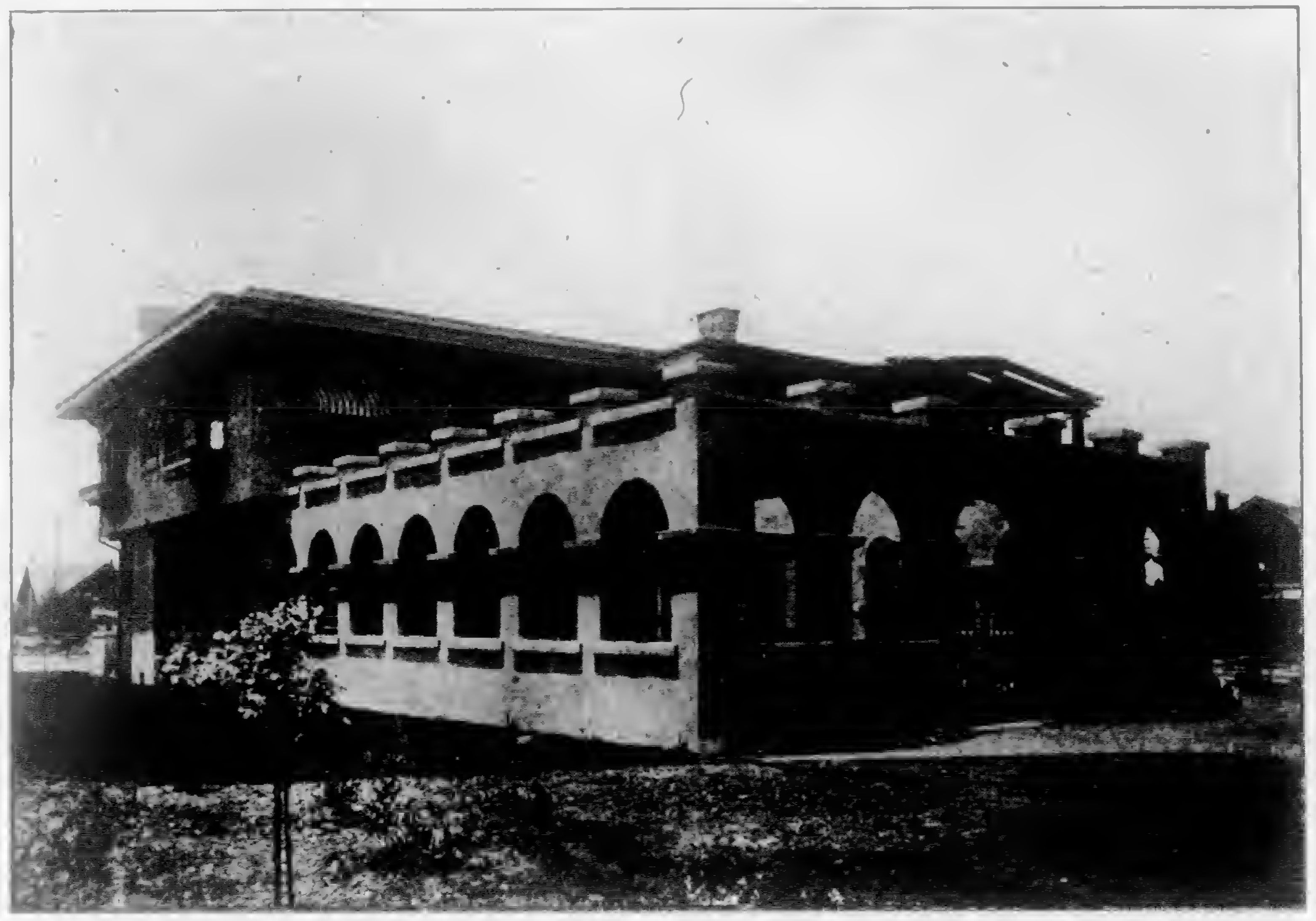

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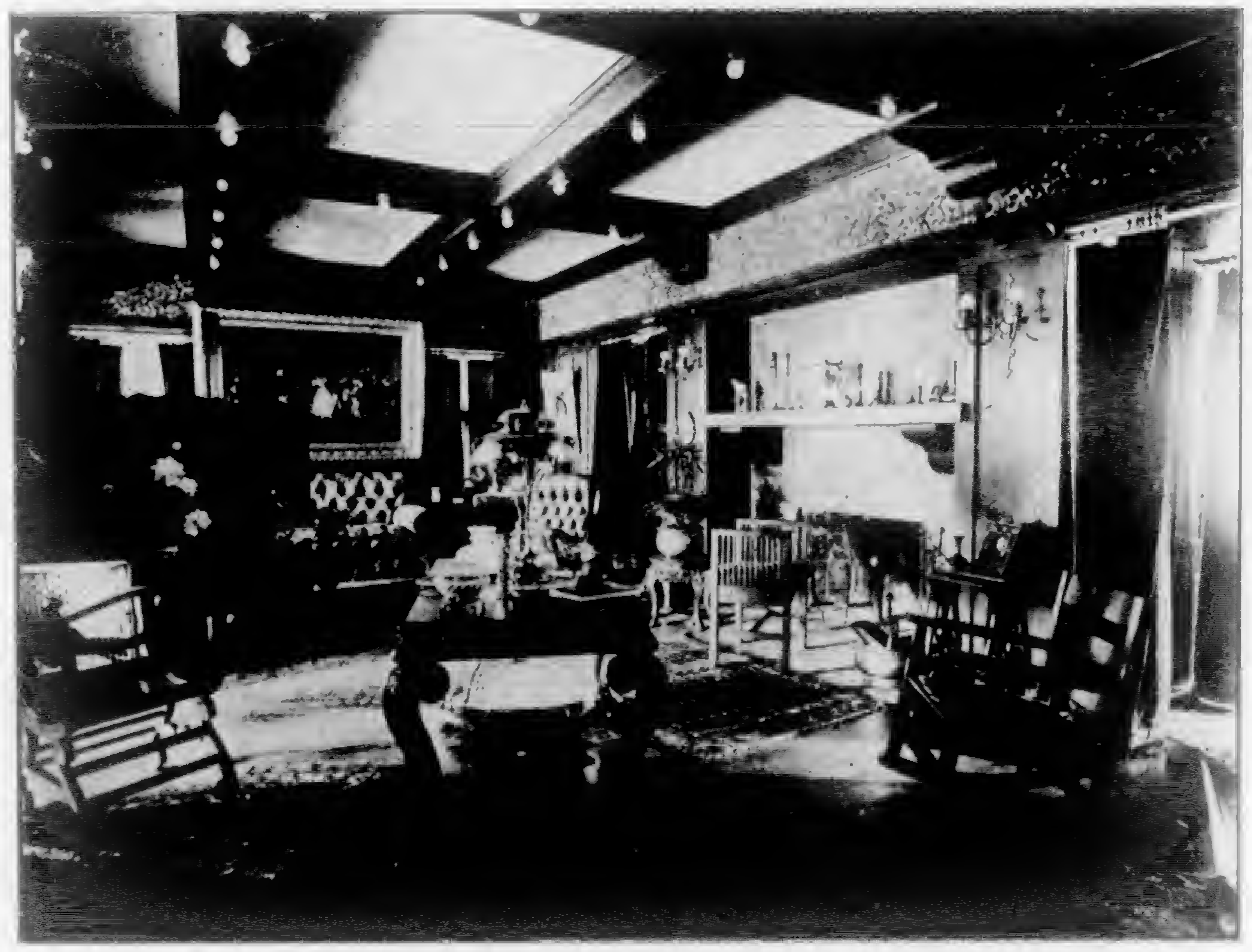

Living Room, Residence of Mrs. Joseph Faxton, Los Angeles
J. C. Newsome, Architect

Fiftieth Anniversary of American Institute of Architects

Design of Menu of A. I. A. Banquet, by Edwin H. Blashfield

THE fortieth annual convention of the American Institute of Architects held in Washington, D. C., January 7th, 8th and 9th, was a most interesting affair, and delegates from leading centers were present. A meeting of the board of directors was held in the Octagon on the afternoon of January 5th, and on Monday morning the members of the Institute gathered in the Assembly Hall of the New Willard Hotel and registered their names.

An address of welcome was made by Henry B. F. MacFarland, president of the Board of Commissioners of the District of Columbia, and the speaker was several times interrupted by bursts of applause. Numerous committees were announced by President Frank Miles Day; the board of directors made its report, as did also the treasurer and auditing committee, the various Chapters; numerous standing and special committees, etc. These occupied the morning and afternoon sessions and constituted an interesting feature of the golden jubilee, so-called because it marked the fiftieth anniversary of the foundation of the Institute.

An important matter considered with the reading of the reports was a form of competition contract authorized by the Institute, including general principles of competition agreement; the code, the judges, the procedure, the competition charges, schedule of costs and the ethics of competition.

In the afternoon a committee escorted from the railroad station to the hotel Sir Aston Webb, formerly president of the Royal Institute of British Architects, and upon whom at the reception at the Corcoran Art Gallery, on the evening of January 8th, was conferred the gold medal of the American Institute of Architects. The presentation address was made by President Day.

The sessions of Tuesday were devoted to the election of officers and directors, the reports of the committees appointed at the first session of the convention and the consideration of miscellaneous business.

The election of officers resulted as follows: President, Frank Miles Day, Philadelphia, Pa.; first vice-president, William B. Mundie, Chicago; second vice-president, R. C. Sturgis, Boston; secretary and treasurer, Glenn Brown, Washington. The directors elected for three years were Walter Cook, New York; Edgar V. Seeler, Philadelphia, and J. L. Maurin, St. Louis. The auditor chosen was Robert Stead, Washington.

The morning session of January 9th was devoted to miscellaneous business and in the afternoon there were exercises commemorative of the foundation of the Institute. In the evening was the annual dinner in the New Willard Hotel, at which 250 guests were present.

Applied Arts and Sciences*

THE committee on Applied Arts and Sciences was instructed "to consider on such questions as": First, "how to overcome the unsatisfactory conditions due to the severance of the intimate relation once existing between architect and the craftsman"; Second, "how to facilitate the delegation of design to craftsmen"; and Third, "how to secure some assistance to the architect in his work from the Arts and Crafts movement."

In order to know "how to overcome the unsatisfactory conditions due to" the cause above stated, it is quite necessary to understand the nature of the original conditions and the reasons underlying the changes which have led up to and still compel "the severance of that intimate relation once existing between architect and the craftsman." Even with a knowledge of the facts, power to do not always follows desire to do, and to overcome or to know how to overcome the unsatisfactory conditions is not within the power of a single committee, a single body, or a single generation. A partial knowledge, however, may suggest mitigations, where it can not effect radical change. The intense apathy of the great public toward art, the general lack of knowledge or care as to what constitutes art or how art touches life, the utterly commonplace and devitalizing attitude on part of public and designer, of seeking the line of least resistance, of harking back to something which is well known and can be recognized on the instant—all of this conspires against the elevating of art standards; and the architect, if he would, can not rise above the general flood of wilful and self-satisfied stupefaction. It seems perfectly demonstrable that in the great periods of art everybody loved and appreciated beauty, whether actual producers thereof or not. The power to create and the capacity to appreciate beauty sprang from the conditions of life and inhere in all classes—at least the capacity for appreciation was general. The artists themselves, until the Renaissance, were drawn mainly from one class and that not socially a high one. They were banded as brothers; their training was from within and was developed by association; their minds were of about the same caliber; and mutual sympathy in thought and ideal made for the best. Class distinctions in art did not exist in the lofty periods as they do now. Even in our great democracy these distinctions are most clearly marked. The doers, that is, the craftsmen, are of the lower classes, the designers are a grade higher in the social scale, the architects are coming more and more from the cultured class, and, unfortunately for art, many of independent means are seeking the profession because the work is genteel. The art patrons and they who may dictate the monumental art of the world are of the moneyed aristocracy. The assumption of knowledge and the possession of power in the upper classes begets in the mind of the worker a dull subservience which does not make for art and which on all counts is to be deplored. The general scheme of education is herein at fault, for it touches life but superficially and gives to "educated persons" a mere smattering of the non-essentials of art and to the workman a business knowledge, the sole end of which is its mintable quality. And life has not gained by that phase of modern education which devotes its energies to developing art producers. Once art was lived, now it is taught. "Schools of art" have come to be considered necessary. But schools do not seem to have justified themselves, while they do seem in no small measure to justify the proverb—"When schools come in, art goes out."

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*Report presented at the Convention of the A. I. A., held January, 1907, by the Committee on Applied Arts and Sciences, Irving K. Pond, Chairman.

An irrational system of general education, then, and closely drawn class distinctions, especially in the field of art production, would seem to be marked factors in this severance of ties between architect and craftsman. Realizing the great advantage to the art worker in the old intimate conditions, many great and rare minds have advocated an advance beyond the unsocial and wholly irrational tendencies of modern life, to an ideal existence under State socialism, viewing the matter as one falling in the range of political economy. It would seem that in this they have not been wholly justified, for the great creative periods of art and those referred to during which love and appreciation of art have been general, have occurred under varied forms of government and have been wholly independent of the nature of the governmental structure. The matter is largely one of social ethics, of mental development, and of social economics, and not at all of governmental forms. The socialism which shall bring joy in labor is not necessarily governmental, but it is greatly to be feared that the socialism which is governmental will operate to reduce humanity to one dead level of incentive, of capacity, of achievement, and may be of recompense, though that is of minor importance. The arbitrary apportionment of task which must almost of necessity accompany any system of State initiative and supervision of activities can not otherwise than stunt personality and individuality. But this phase of socialism will hardly endure, for the annihilation of the distinctive functions of the various members can no more prevail in the body politic than it can in the individual, the body natural. For by nature and design (if we grant to the great universe a directing force) certain individuals, as certain members, are appointed—not condemned, but consecrated—to do certain work, and the pleasure and profit to the individual need not necessarily be in the work he performs, except as that work is necessary to the wholesome life of the body general. In other words, the feet are not to take upon themselves the work of the hands; the heart finds itself in deep and troubled water when it takes upon itself the functions of the brain; the brain is incapable of doing the work of the heart. The effort of a new civilization should be, not to uproot individuality, not to smooth to a dead level the face of nature, the southern slope which catches the sun and the rugged eminence which shields it from the winds, but to make life tolerable where it has been intolerable, to make beauty bloom where no beauty has been, to minimize as far as possible the burden of irksome toil and to make the general conditions of life productive of the higher happiness. Through education and bettered environment the State may make the general life fruitful of sane enjoyment. A broader education, a wider sympathy, a deeper knowledge of the realities of life, a developed love of beauty in the mind of the race and a passionate zeal to express it, will reunite the sundered relation of intimacy which once existed between creator, interpreter, and laity; that is, architect, craftsman, and public.

Until an advanced state of art endeavor and of art appreciation has been reached, the architect need not seriously concern himself with the matter of delegation of design to craftsmen. The question is, rather how far shall the personal equation be allowed to enter in the interpretation of a sketch by the craftsman. No broadminded architect shuts himself off from the suggestions of draughtsman or craftsman. But unless there be a singleness of thought and purpose in the minds of architect, assistant and interpreter, and understanding born of long seasons of sympathetic interchange of thought and idea, suggestions will tend rarely toward a unified expression. The wise architect will seek to have about him understanding and sympathetic assistants in all branches, but the architect need not seek to escape the travail of creation. Does the work bear down upon him? He must realize that beauty comes through stress, perfection through infinite pains, life comes even through death. The practical solution of the problem for today would seem, then, to be for the architect to bring himself as far as possible into the same relation with the craftsman that he holds with his assistant over the board, and failing that, should seek the craftsman whose work expresses a parallelism of idealism and motive, and, having found, employ that hand to execute the work and that mind to interpret the sketch.

The so-called Arts and Crafts movement, we must frankly realize, has not yet entered the stage in which it can be of much or of any assistance to the architect. The movement as such has not yet affected the great body of craftsmen. Artists and craftsmen connected with the movement have confined their thought and activity mainly to the design and execution of single and simple objects of use or beauty, such as pieces of furniture, household utensils, and bits of decoration. In most of this production the amateur spirit is manifested and not any of it bears upon the greater problems of architecture. Most of the artist-craftsmen have no intimate knowledge of architectural principles, which is to be regretted; and, too, they have had no architectural schooling, upon which they are to be congratulated, at least those of them to whom such schooling would mean the acquirement of an academic method and a frame of mind which expresses itself in the application of architectural details to the various simple objects, rather than in a lucid recognition of the limitation of materials and a frank adaptation of form to use. It is in the design and execution of stained glass for windows and ornamental metal work and carvings which the arts-craftsmen are called upon occasionally to accomplish, that the want of appreciation of architectural and structural lines most manifests itself. Now and then arts-craftsmenship has undertaken to impress its spirit upon some modest example of cottage architecture, and has succeeded; but these are sporadic cases, and do not affect in any way the general tendencies. The architecture of the cottage, of the lesser house, of the villa, of the mansion, of the palace, is but a reflection of the greater architectural spirit, and until architects have learned to handle the greater architectural problems, and to solve them on their merits without reference to conventions established in other climes, under conditions, the lesser architecture will suffer from and express the same want of capacity for freshness of invention and directness of thought, the same inability to more than rehash old *motifs* which expression in the greater and the monumental architecture of the day.

It were unjust to place upon the architect the entire blame, for blame there is, in all this abuse of tradition. It were better to attribute it in the large part to the lack of taste and of knowledge which exists because of the certain deficiencies in our civilization, the lack of correct methods in education which fosters the general ignorance of and indifference toward all forms of art. The germ of hope lies in the attitude of some of the lesser architects, and in the Arts and Crafts movement—not so much in what it has accomplished as in the spirit which animates it. The movement protends an awakening to art consciousness

Depraved Building Business Practice

By WM. HAM. HALL

[*This third article of Mr. Wm. Ham. Hall's Architect and Engineer series is again the opening of a new subject and a separate set of papers which will soon appear in book form. These papers are addressed directly to property owners and citizens generally. The first set, of which the following is the second one, deals with the business relations of owners and contractors under the several forms of contract and of organization for the contracting business. They will be found of immediate practical interest and importance.*]

IT is the common custom to lay at the door of the building contractor by far the greater part of the blame for poorly built houses. The owner bemoans his fate at having to deal with contractors. The architect, shrugging his shoulders, tells you that there really are some trustworthy contractors. But common talk implies that there are not. The fact is that, barring a lot of scamps whom the great body of contractors themselves tabboo, there is in the contracting business as large a proportion of trustworthy men as in other businesses. There is no necessity for an owner to deal with the scamps, and he will not if he goes about getting his building erected, in a sound and business-like way.

The contracting business in this country has until recently been almost wholly upon a radically unsound basis, which has put a premium on rascality and, in many cases, made petty trickery almost necessary to business existence. Of late years better systems for contract agreement have been brought forward, and although the contract business status is still far from what it ought to be, in the contractor's as well as the owner's interest, the public might, except for certain sporadic developments just now having a run of favor, be congratulated on an outlook promising cleaner contract relations and better contract work.

But however bad the conditions may be at any time, the underlying fault is not, by any means, wholly with the contractor. He cannot control the situation. The real fault is always in the system and the building conditions which it produces. It is not the contractors who make the business system what it may happen to be, but the system which makes the contractors whatever they are found to be. The property owners and money lenders to such owners are each as much responsible for the system as are the contractors. Thus is behooves owners to look a little into such matters, and to do their part toward making a clean contracting business possible, and it behooves lenders to put forth a strong hand to the betterment of that on which the value of their securities depends.

Without stopping further to talk in generalities, I come at once to the kernel of this article. I address it to all good citizens; property owners in particular.

Do not attempt to erect your building without the professional services of an independent architect. That is, do not make your builder your architect. You make a fundamental and dangerous business error if you do. The public would have grave cause for regret and even alarm if property owners in any considerable number should pursue such a course. Bear with me while I point out its bearing on you and the public welfare.

There is a lesson of life which it is good fortune to learn early, and that is the wisdom of discriminating between opposing and unavoidable evils, of seizing the lesser, and strenuously making the most of it—turning it to virtue, if you can.

If the architect looms as an evil in the path of your building intentions, take my word for it, further on you will encounter the builder, and from the earliest time he has been looked upon as the greater evil of the two. You cannot combine them, neither can they amalgamate themselves to your advantage. Quicksilver seizes upon gold and absorbs it into its substance, but the resulting amalgam as a flabby, and in itself, almost useless compound which has to be retorted back to its separate forms before it is fitted for human application.

Just so with builders and architects; when the architect is combined with the builder he is swallowed up in the less stable calling, which he does not solidify any more than the gold does the quicksilver, and the product is an amalgamated business being which is not suited to your service, as a property owner. This results from the very nature of things human.

Abandoning metaphor and "coming down to brass tacks," worldwide experience has shown, from time out of mind, that a building can but seldom, almost never, be erected without difference arising between the interests involved. A building is a thing capable of infinite variation, and complications unavoidably come about in the course of its evolution. The human mind is limited in its scope. The human heart is on one side only of the body. Neither party to this building contract can foresee all the differences which may arise in the course of the building's progress. Neither heart can be on both sides of the conflicts of interest unavoidably resulting.

These conflicts may not come to the surface as between the owner and the builder; but, as between the value of the building itself and the interests of the man seeking to make money by its erection, they are not to be avoided under the forms of contract thus far commonly used.

Courts are designed to settle the differences between men. But we do not assume that even half of those who are parties to litigation, are "crooks". Honest differences most often give rise to the litigations which crowd our courts. We all recognize how much better it were could our disputes be arbitrated and kept out of court. Custom, from experience in time, has provided in the architect, the arbiter between owner and builder. It is in this capacity wherein the architect is indispensable. Is it not curious that in this one relation between men, custom has provided a body of men to serve as arbiters. Why is this? Because while in every other relation men are prone to settle most of their differences out of court and without arbitration, man has been forced to realize that the relation between owner and builder demands special provision for arbitration to prevent the business world being swamped in their litigations.

It is no answer to say that the "Percentage", or any other, basis for contract work, explained in following talks, does away with the greater part of ground for conflicts between owner and builder. It is no answer to say that an engineer, architect or company operating on a we-make-your-plans-and-erect-your-buildings-for-ten-per-cent-of-cost basis, does not get into disputes with its clients. Of course it does not. Under such contracts on such conditions the client has slight chance to win in a dispute. He has not been able to get ground for a dispute. He is "down and out" from the start; the building cannot talk, and people who might know of the rotten work which has gone into it, would not talk. What business of theirs, forsooth, in any particular case, to come to an owner's rescue who deliberately puts himself in such a position?

It is no rejoinder to the point I make, to say that under some forms of contract the owners and the builders interest are so nearly alike that it will serve the builder best to conserve his client's interests and thereby assure his friendship as reference. This might be so if the owner understood the building business as well as the builder, or if the building could talk, or if the client had a skilled professional representative, an architect, on the work, in his interest alone. But under an I-make-your-plans-and-do as-I-please-for-ten-per-cent contract, that kind of talk is nonsense, too thin for any body who knows the building business to listen to with patience.

It probably never occurred to you that a most important part of an architect's service is in supervising construction of your building, in seeing that it is fairly treated in your interest, and serving as a shield between your purse and your builder. But it is. The making of plans and specifications by your architect is merely a function precedent to the more valuable service he renders in assuring realization, in the building, of the plans you have accepted. How can you possibly have any such assurance when you employ in but one man, one interest, or one aggregation, the persons who are to please you on paper and then to convert the picture into steel, wood, stone, brick or concrete?

Unfortunately, many architects themselves, overlook or slight this prime function of their calling, that of supervisor of constructions in their charge. These make you a series of satisfying drawings, select a builder, and leave much to him which they should personally or by competent associate, closely supervise. But even this loose practice, of which the best class of architects, it is hoped, are not guilty, is safer for you than the other, wherein your builder is your architect.

You may be an architect yourself and make plans and specifications for your own building, to suit yourself better than anyone else could, but you will probably feel the need of a brother architect as supervisor of its construction and arbiter between your builder and yourself as owner, before you "get the painters out of the house".

Or, not being an architect, you may place your job with a combination architect-builder or an engineer-construction company which undertakes to design as well as erect structures, and you may get a plan just to your liking; but if you sign a contract to have such an amalgamated concern both plan and erect your building, take my word for it, you will some day regret the step.

You will have made a fundamental business error. You will have struck a blow at the root of a system which world-experience has proven indispensable for your protection. You will have omitted the shield which all usage has shown to be necessary between your purse and him to whom you have engaged to pay its contents for services as to which he is expert and you are not. You will have contributed to put on its feet a building business system so widely open to abuse that the bulk of the building and architect businesses, in the course of time and not so very long either will pass into the hands of the veriest fakirs, and, of course, to the grave detriment of public as well as private interests. What is the use of railing against "graft," and "frenzied finance" and "trust corruption" when solid and staid business men and good-old-stand-by citizens, to whom we have looked for example of civic and business virtue, will thoughtlessly pursue a course contributory to such an outcome? This is no reflection on any man or set of men, but only an endeavor to point out the dangerous unsoundness of a business and professional (?) fad of the times.

Not all missteps bring the swift retribution which they deserve, and because of this, your case might long go unpunished, and meanwhile you may think you have escaped. But your building cannot talk and no one will have watched over it solely in its interest or yours. The tongue which can persuade an owner to open his purse to its hands, "sight-unseen" (as boys used to say in trading marbles), for the purpose of planning and also of making his building, often may succeed in causing the owner later to think that he has in the result all he has paid for. But time, to say nothing of earthquakes and fires, will give another account of what took place under that Plan-as-I-please-and-do-as-I-please-and-get-paid-ten-per-cent contract.

There is no reason of professional propriety or business morality why engineers and architects should not become contractors, and there is every reason, making for clean business and good construction, why they should. When a man by years of professional contact with construction work, feels that he understands it, he owes it to himself to take it up, if he has good opportunity so to do, if he can better himself financially, and if circumstances allow of self-respecting occupation in it. He should have no compunctions at leaving his profession. But when he becomes a contractor he ought to show that he was an honorable engineer or architect, and intends to be a trustworthy contractor, by refusing to undertake professional responsibility on jobs he seeks to secure as contractor. Property owners should remember this in choosing the contractor who is to spend their money.

An engineer or architect who combines his professional business with a contract business, to the exclusion of engineers or architects in the service of owners, is either professionally short-sighted or morally blind, or he is an egotist, who should be put under a glass case as a curiosity. If he realizes the mission of the engineering and architectural professions to human society, he should know that he is trampling on that mission, to the public injury, to the detriment of those with whom he deals, and to the utter ruination of his profession. If he does not know this he is professionally short-sighted, at least, and it will be an act of kindness to supply him with correctional glasses. It might even be thought that he is without the high instincts of the professional man; though doubtless there are cases wherein this accusation would be unjust. Some good people are sometimes swept off their feet by commercial ambition, and later regret their lack of firmness.

If the professional man amalgamating himself into a designer-builder, does not realize that he is undermining his profession, or maintains that the profession should follow his course, in the interest of "progress" by the new way of getting your building builded, then we may assume that he can not see on the moral side of the subject. He does not see that his way of doing business is, practically, to say to the client: "Dispense with " all time-honored safe-guards, Mr. Owner; permit me to put my hand into " your pockets, draw out your money, expend it in a building for you, that " I will design and supervise, and for which service you will pay me ten " cents on each dollar I spend for you." If that is not an immoral proposition for one man to make to another in business, what is?

Surely, it is not based on any practice which heretofore has been proven sound and safe in the business world. It seems to presume on the owners soft-headedness, or his thoughtlessness, or lack of business experience. If either of these, then it is immoral business to make such a proposition. Perhaps in some cases it may be grounded on self assumption of superlatively superior moral and business worthiness on the part of he who makes the proposition. Then it becomes a sort of honest "We-are-good-We-are-capable-We-will-take-care-of-you" proposition. If I thought the business world was ready for that sort of thing, I would have nothing to say on the subject.

It matters not that any particular individual or aggregation practicing in this way be both capable and honest. The business principle on which they operate is so unsound that the practice will surely and swiftly come to a stage of offensive decay. Meanwhile, some owners will have saved (?) a paltry five per cent in architects' fees; but they may later have the chagrin of seeing that they have contributed toward debauchery of an honorable calling, and have helped to open the way for tumble-down construction in the upbuilding of their city.

Neither does it matter that the commercial-professional man or his company offers owners every facility for watching and "controlling" the expenditure of their money, under this I-plan-and-build-and-take-care-of-you system. This particular tune which the trumpet of this advanced-way-of-building man plays is dangerous, for it appears to lull his own concience as well as to soothe into business torpitude the client whom he secures. What good does that so-called "control" do the owner when he is incapable of exercising it himself and has no one in his service who as a specialist is thus fitted to protect him and the integrity of his building?

Finally, if we give the commercial-professional man credit for moral preception, we must at least convict him of indifference to the working of his unsound business system by others who may not be safeguarded by his brand of refined honesty. And, as a corollary, we must further conclude that he has such a high opinion of himself that he really believes he can long-continue to do full justice to his clients, and at the same time take care of his own interests, in a business, of dollars and cents, wherein he has all the advantage and his clients are, from the start, prostrate at his feet.

Property owner, think of this situation. Do not put yourself in it. Human nature has not been made over again in the person of this amalgamated business creature, the engineer-contractor or architect-contractor or company, working under an I-plan-and-build-it contract system, for your benefit. In the arena of life there are many battles. Enter with a shield those in which you are not expert with a sword. You are not a technical and business swordsman in matters of building. You are not expert in cut and thrust over questions sure to arise if your best interests and those of your building itself, are consulted in the business and technical details of its erection. You cannot serve as sentry over the channels of supply of all that will be necessary in the work. You cannot puncture with any weapon you have the bags of technical wind that might be substituted for sound sense material in planning your construction. Beware, in signing a contract, lest you are placed prostrate where you are helpless. Your engineer or architect-builder contract vis-a-vis is a skilled gladiator in these matters. He will have it all his own way. The arena of the only real conflict in your affair will be his inner conscience. He there has for an audience his own business interests and a bastard representative of your interests, through the fact of his being your architect born of your builder. When the time comes for decision of matters affecting the integrity of your building, is it not probable that his audience will, by a large majority, as did the brutal Romans who wanted to see the fallen combatants in their arenas killed, present "thumbs down"? Will not his interests lead him to act in the interest of his interests? Of course they will.

It should not be necessary to assume that any particular party is not doing a legitimate building business. It should not be necessary to show that this engineer-contractor or architect-contractor way of conducting the building business is a way being resorted to in some places by building fakirs. To widely open the eyes of the intelligent person to the private and public danger in such practice, it should only be necessary to point out that it is based on an idea which from the viewpoint of world-wide business experience, is rotten.

If men of means chose to go into the building business as a money-making proposition, and employ an architect or engineer on salary or take him in as a partner, and thus secure his professional services to plan, supervise and erect buildings by contract, for their profit, they occupy a different position from their professional associate. They with their money chose to enter the engineer's, architect's and builder's callings, and they find a professional man who in consideration of the salary or share interest or both, is willing that his professional brains and experience be farmed out on speculation. That is all there is to it, so far as the capitalists are concerned. We cannot help noticing, however, that capitalized law-jobbing companies have not been similarly formed. There are probably attorneys who would farm out their services in such a venture for a good salary or a share of the profits. Necessity might offer an excuse for the lawyer in such a case. But no attorney recognized as trustworthy and a man of ability would put himself in such a position. The very capitalists who would do such a thing with an architect or engineer, would not think of doing it with a lawyer because they would despise an attorney who would join them on such a footing.

And so, they would look upon a doctor or a surgeon as a dangerous quack who would allow them as a company to sell his professional services in a job lot with his prescribed remedies and bandages prepared at their shop, together with lotions, pink powder-puffs and other things carried in stock by druggists such as they themselves would in that case be.

A property owner may choose to do his own building and employ professional men to plan and execute the work for him; or a group of owners may form a company to plan and erect their own buildings in like manner; and this would be absolutely legitimate for all concerned, only somewhat discouraging to independent professional men and builders.

Finally, the architect-contractor may say he has had such unfortunate experience in having his clients' buildings wretchedly erected by contractors, that he has determined to throw to the winds all professional considerations and protect his clients and himself by undertaking to erect as well as plan their buildings by contract. Such a course would be heroic. But many a hero has fallen through choosing the wrong horn of the dilemma by which he was confronted. The architect in such a case simply convicts himself of having failed as supervisor of his clients' former works, and of being deficient in firmness to face the contractor bogey for the future. There is nothing more to be said of such a case, except that all else in this talk applies to it.

There are legitimate fields for engineer-construction companies and architect-contractors but the planning and erection of buildings independently of separate professional service solely in the interest of the owner, is not one of them.

It would be to the public good if all high class construction work were handled by such combinations or companies, but, as constructing contractors, merely. The influence would be toward cleaner contract business and better building. The practice would conduce to perfect and purify the engineering and architectural professions having to plan and supervise such work in the client's interest.

Professionally-competent contractors, both individuals and companies, very properly submit plans prepared by themselves or their engineers or architects, by which they propose to carry out works, or erect buildings or engineering constructions, under contract, for owners who have professional men separately engaged to advise them and otherwise safeguard their interests. But when such companies or amalgamated peoples represent to owners or allow owners to conclude that it is a useless expense to employ an architect or engineer, seeing that they stand ready to furnish plans for them as well as to build for them, their first move is to tear down the profession which is the very corner-stone of their alleged extra worth over the ordinary contractor, whom they, at the same time, belittle and undermine. Thus, on the one hand, they place themselves, professionally, in the shoes of fakirs, and, on the other hand, they minimize the value of the vaunted practical side of their being.

It is much to be regretted that some good and worthy engineers and architects seem to be blinded to the inevitably disastrous outcome of this course. Their fellows who are still loyal to their professions and to the interest of the public, should reason with them, and property owners should, for their own protection, help to the end in view—the saving of the technical professions from the grasp of mere commercialism.

* * *

Painting Galvanized Iron

MUCH difficulty is generally experienced in getting paint to adhere firmly to galvanized iron, and various experiments are resorted to to overcome the trouble. The government has adopted a mode of procedure that seems to be satisfactory. Their specifications compel the use of vinegar for washing the surface preparatory to painting. This roughens or corrodes the surface, and gives the paint better adhesion.—Modern Painter.

* * *

Tall Chimneys

THE highest chimney in England is that at Barlow & Dobson's mill, at Bolton. It is 368 feet in height and the material used in its construction was 800,000 bricks and 122 tons of stone.

This big smokestack is excelled by at least two in Scotland—the St. Rollox chimney in Glasgow is 445 feet and the Townsend chimney in the same city is 468 feet high.

All chimneys vibrate, says Harper's Weekly, especially in a gale; it is a condition of their safety, but the oscillation at the top is a serious matter for any one at work there during a high wind, and the job is postponed to a calmer day.

Lancashire also boasts one of the crookedest chimneys in the world—a shaft at Brook Mill, Heywood—which is nearly 200 feet high and more than six feet out of plumb. It has been belted with iron bands and is considered safe.

Cause of Earthquake Shock and Its Effect on Building Foundations

By ROBERT MORGENEIER, Architect and Engineer

TO KNOW much of what has been said, written and observed on earthquake phenomena from the time of Leibnitz to Rudolph Falb, makes it somewhat easier to understand the nature and cause of the constant seismic tremors and occasional vivid shocks, which prevail in a certain part of the State of California. In addition to this knowledge, however, a close observation of the phenomena and a careful study of the field in which it is manifest, will give the investigator additional and very valuable information, and will above all convince him that all those general and wide spread causes, affecting whole continents more or less, are not as active here as some may be inclined to believe. Undoubtedly upheaval due to contraction of the mass of the earth is operative on the Pacific Coast, but its operation is so gradual and its climaxes so wide apart, that they are liable to escape the observation of all except the seismologist.

The one first fact confronting the investigator, is that the shocks as regards destructiveness are, and in every instance have been, confined to a certain limited territory, skirting the coast; and, secondly, the territory contiguous thereto is practically in constant repose, or in other words, that not only is the area of destructiveness within the limits of the State, but also the cause of such disturbance is within or at best very close to such disturbed area. The reports, examinations and surveys made since the destructive shock of April 18, 1906, coincide with those covering the shock of 1868, and the surface evidence in the way of scarps, cracks or faults are practically the same in both instances. These latter show the area of disturbance was limited, that it can be readily segregated and show relative to its position with the greater undisturbed area.

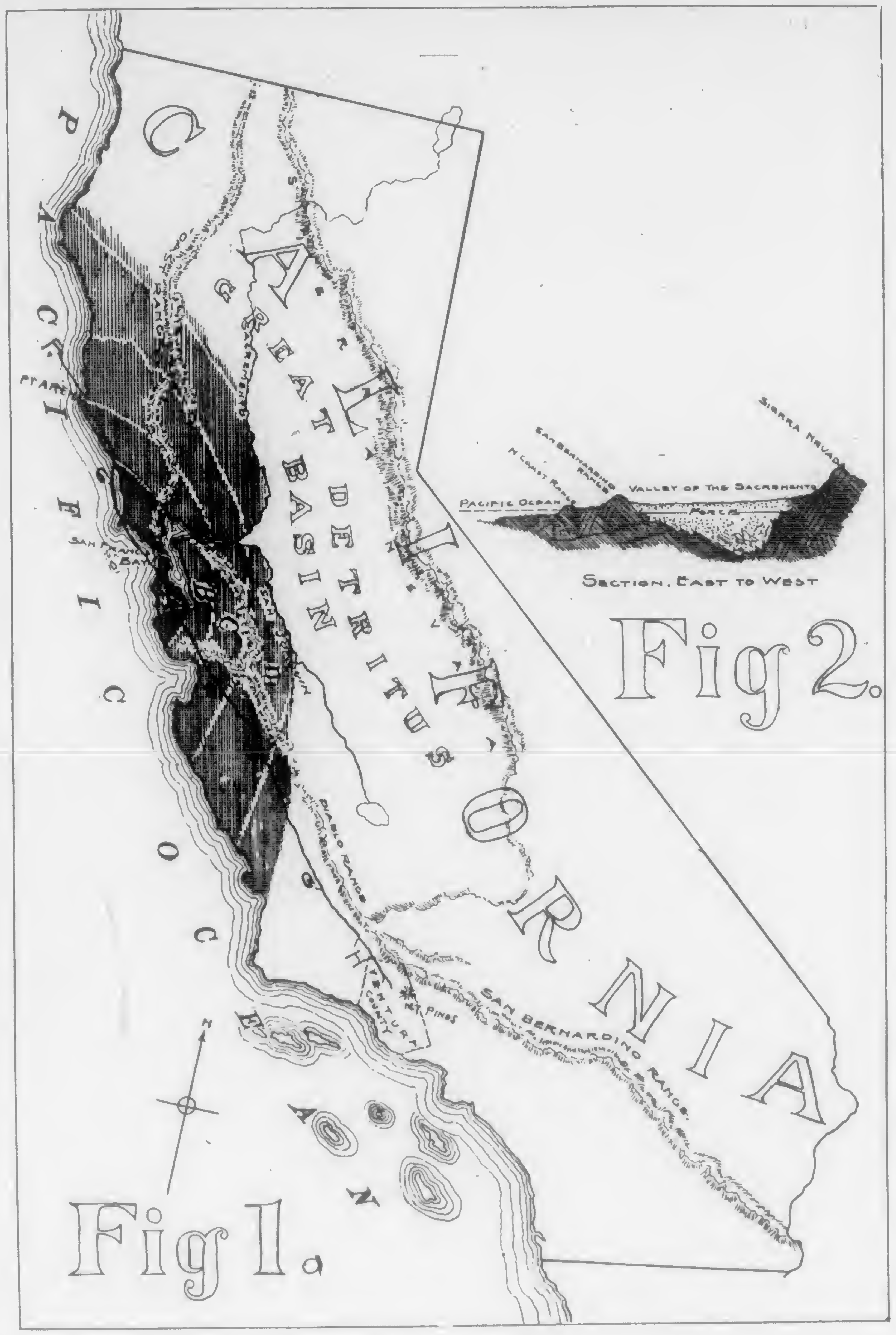
On Figure 1 is shown a diagramatic or generalized geological surface map of the State, which I apprehend will suffice to make clear the various points to be herein passed upon. The diagram cross-sections on Figures 2 and 3, will serve to further elucidate the subject. It will be noticed that on Figure 1, and spreading centrally from the indenture of San Francisco bay, are shown four shaded zones marked A, B, C and D. This shaded part shows the entire area in which the destructive shock manifested itself in 1868, and again in 1906, and furthermore embraced considerable territory in which the shock was of a less serious nature. The zone of greatest destructiveness is A, the next B, and so on to D, in which destruction is rare or entirely lacking, the effect being more in the nature of a violent shaking, particularly heavy waves, being greatest in the zone A. Within the zone A are the counties of Sonoma, Marin, San Francisco, San Mateo and part of Santa Clara and Santa Cruz, and passing through these, as indicated on Figure 1, by the irregular line GG from F to H, is a new fault due to the shock of April 18, 1906. Along this fault disturbances of the surface formerly were not so manifect. Embraced in all of the zones from A to E are the above counties and the whole or fractional parts of the counties of Mendocino, Glenn, Colusa, Lake, Napa, Yolo, Solano, Sacramento, San Joaquin, Contra Costa, Alameda, Stanislaus, Merced, Fresno, San Benito, Monterey and San Luis Obispo. The new fault just referred to starts at F on map 1 and coinciding with the location of Point Arena; and terminates at Point H, coinciding with Mt. Pinos in Ventura county. As shown, this line follows in a general way the old scarps, cracks or faults apparent on the surface and due to ancient tectonic quake, as attested by their great lengths.

The shock of April 18, 1906, was due to subsidence of undermined strata thrown out of equilibrium by a preponderance of stress, affecting it primarily, and supplanted by impact coming in a direction from easterly and westerly. The region of the fault proved the point of greatest weakness with the consequence that dislocations with attendant movement was felt more or less along the entire line.

For the limited purpose of this communication we may consider the area within the zone shown on Figure 1, as that part of California in which seismic shock prevails; and therein and adjacent thereto, seek answer to questions that directly interest us, viz: First, What causes shocks? Second, What is the general direction of the active force and the direction and extent of the earth waves generated? Third, What, if any, precautions can we exercise in the construction of buildings to safe-guard us against such shocks?

Avoiding all technical detail and exploitation, I submit that as regards the first question. The prime cause of subsidence being mass seeking equilibrium, therefore the lack of this in subsiding area can only be due to the progressive removal of supporting, underlying strata and assisted therein by an exterior force which overcomes the inertia of the mass. In this case the subsiding mass was the shattered, crumbling and faulted rim of crumpled and differing strata, verging on or underlying the ocean, as indicated by the fault line G, and forming the western boundary of two spurs, or natural wing dams, detatched from the greater mass of the Sierra, and at the fourth and final upheaval, when so detached in the process of upheaval receding westerly to a lower level, thereby forming a primeval chasm 200 miles wide by 300 miles long and of stupendous and unknown depth. For a faint conception of this movement, or rather the results arising therefrom, see the diagrams Nos. 2 and 3. The chasm is again filled with subsided fault strata from the mountain mass, intermingled with sand, gravel, broken and disintegrated rock, the detritus of ages of erosion, floatation and local seismic rise and fall. Assuming that all changes in the crust of the earth are due to upheaval, due to the constant contraction of the mass of the earth and that simultaneously a leveling process, due to water and disintegration of the mass, is going on, then the great detritus basin and its geological function may be readily understood. The contents of the basin are really the connecting link between the mass of the Sierra and the Coast Range. It is as a huge wedge driven obliquely between them with its point under the lesser mass and by gravity and hydraulic pressure crowding westerly.

In illustration of the force of subterranean waters, when acting in conjunction with stress of matter seeking equilibrium, Figure 3 will prove instructive. The central line of cleavage between the Sierra and Coast Range masses are still somewhat surface-indicated by the beds of the Sacramento and San Joaquin rivers, and where these trend and open out to discharge their waters, either surface or subterraneous, is located the head, the resultant of the total stress, which in the ages to come is destined to crush downward and again thrust upward and outward that region indicated by the shaded zone sections from A to D, Figure 1.



Figures 1 and 2

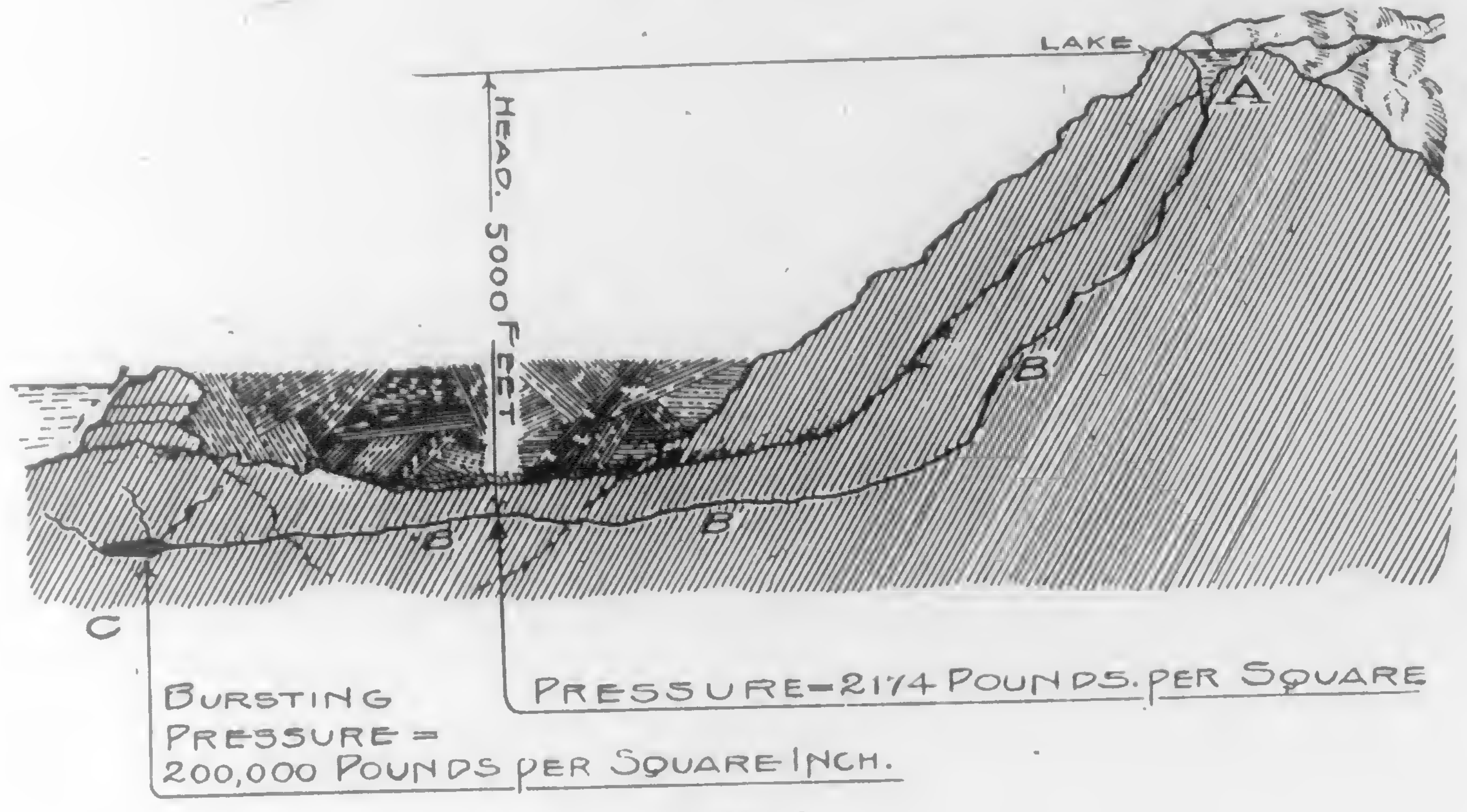

LAKE
A
HEAD. 5000 FEET
B
B
B
C
BURSTING PRESSURE = 200,000 POUNDS PER SQUARE INCH.
PRESSURE=2174 POUNDS. PER SQUARE

Figure 3

In the superior mass of the Sierra is found the immovable background of the force acting westerly, the accumulated stress is vented by the coast, which ruptures. Before such rupturing, a crushing and tilting of underlying strata, accompanied by subterranean erosion, has carried the weakened area, or some part thereof, to the verge of instability, hence the result. Of the great abysmal descent of the waters, the height and intervening distances of the respective masses and the angles of their slopes, give some additional information.

I am strongly tempted to offer a few figures on the ponderous force engendered in such depth by water along, but recall that I have promised not to intrude with technical information, and particularly because this is not intended for the laity, still a reference to the diagram Figure 3, will show what occurs at even much higher levels. In consideration of the proceeding, I assume that the general direction of the seismic wave is from east to west. That the power upon which it depends is accumulative and when so accumulated manifests itself in tremors often noticeable at the surface. The resultant may be at any point between the main masses and many, in transmission, impact, deflect and gyrate to every conceivable angle.

To the third question we can say, that, without taking up the more abstruse geological questions of the intensity of the shocks, in different locations, it may be safely assumed that as we recede from the coast, the effect diminishes, and that the small number and slight surface fractures and known earth cracks are an absolute assurance that we are not in any immediate danger of being engulfed even in the zone A. A knowledge of the effect of force acting on masses of various degrees of elasticity and also a knowledge of the effect of the shocks heretofore experienced, makes it self-evident that where strata protrudes or forms the surface, any building firmly founded thereon is safe, on the other hand on alluvial soil resting within the digressions of the rock, the building will be subjected to direct westward shocks, eastwardly rebounding, torsinal twists, by the forming of couples, etc., and in such location, public buildings of magnitude should be constructed of iron or very thoroughly reinforced. On "made" ground, like the filling of the old Mission marsh, any building of any considerable height, should be anchored to piles sent down to a good, firm foundation. Of buildings, which in the past were not so founded in this district, the "Valencia Street Hotel" was a terrible example.

Transversely of any surface faulted locality, the foundation walls should be of concrete and properly reinforced with steel, also corners protected in the same way. In San Francisco, as well as elsewhere in the zone A, the direction of the line of travel of the shock force should, if possible, be ascertained and the foundation, as well as transversely thereof, should receive thorough reinforcement to insure a certain degree of flexibility. The walls longitudinally with the line of force should be thoroughly constructed, and of material which will indurate by age. Naturally all footings should be on levels and the different "steps" tied with reinforcement.

These or similar precautions should be taken, if not for our own benefit, for that of posterity.

* * *

Jefferson as an Architect

IT is, perhaps, not generally known that Thomas Jefferson, the author of the Declaration of Independence, and twice President of the United States, in addition to serving as one of the leading architects for planning and building a great and free republic, was likewise an architect in the conventional sense of the word. Poplar Forest, in Bedford county, Va., was at one time the home of Mr. Jefferson, the estate coming to him through his wife. Jefferson built the house himself, after plans of his own drawing.

This old-time mansion which is very spacious, containing twelve large rooms is octagonal in form. The rooms are all very high for the time when the structure was erected, and excellently well lighted. The dining room and parlor are each twenty-eight feet long, with an open fireplace at either end. Like all southern residences of the time, and largely of the present for that matter, the front and rear are provided with long porches, or "galleries," which add decidedly to the architectural beauty of the house, while increasing its convenience and comfort. Every part of the 1100 acres which comprise the estate can be seen from the residence, which demonstrates the wisdom of the great statesman in selecting its site. Poplar Forest is today one of the finest places in Virginia.

* * *

Hollow Glass Bricks

The demand for hollow bricks and building blocks for house construction has induced glass manufacturers to put hollow glass bricks on the market, and they promise to be used extensively for novel and artistic effects. The first glass bricks, being solid, proved a failure on account of their cost, but the hollow glass bricks can be made at much less expense. They are lighter and stronger than clay bricks, and are such excellent non-conductors that walls built of them are proof against dampness, sound, heat and cold. The bricks are sealed hermetically when hot, and are placed in walls with a colorless mortar made of special glass. The bonding strength of the glass mortar is almost as great as the bricks themselves.—Ex.

Proposed New Passenger Depot of the Southern Pacific Company at Berkeley. A Type of the Artistic Buildings Being Erected at Various Points on this System in California

The Licensing of Architects

By W. GARDEN MITCHELL, Architect

I HAVE in front of me an article from the American Architect on the licensing of Architects that, whether an advocate of the law or an opponent, I feel is so unfair that in the simple name of justice I am constrained to take issue with it.

The American Architect says that the license law has been passed by architects to protect themselves against competition and to make more easy the maintenance of rates and the accumulation of profits, and that any assertion that these laws have been made to insure a higher standard of professional ability is "the shallowest of humbug." Were these remarks read by only old stagers in the profession I would not consider them sufficiently serious to be worth disputing, but as there are many others, both in the profession and outside it, who might be misled by such statements, I think it right that the facts of the case should be set forth. The American Architect is at perfect liberty to oppose the license law, but if it so wishes we are at least entitled to demand that the objections be put forward in some reasonable manner. Improved emolument may or may not be a result of the license law, but in no place nor at any time has it been the substantial object. Base motives, such as a desire to reduce fair competition, may have been in the minds of a few, but the broad principle of licensing has always had in view the raising of the standard of architectural requirements. I have been living for a number of years in London and have only recently returned to San Francisco so that I have clearly in my mind the many discussions that have been going on there for several years past on this question of licensing or registration of architects. In England there are two prominent societies that represent architecture: The Royal Institute of British Architects and The Architectural Society. The latter society sprang into existence with the idea of correcting the faults that had been evolved and become venerated by the more fossilized and older society; it was a case of the younger genius and generation. The younger society promoted a bill (which so far has failed to pass through Parliament) for the licensing of architects. The Royal Institute opposed the bill or at least refused its support, but illogically enough this same institute permits of membership to its ranks only by examination, and just such an examination as is set by the California State Board of Architecture. The magic letters F. R. I. B. A. after an architect's name are considered desirable and honorable and to give to the public some assurance that the possessor has at least some capacity in his profession. There are however many good architects who do not belong to this or any society, and partly for the reason that as in times past the examination has not been exacting enough nor well set, the honor of membership, by the really clever, is questionable. If, however, it is necessary and desirable to qualify for membership in the Royal Institute, why not desirable to qualify for membership in the profession generally. Well, as an outcome of these many arguments and contentions in England, I could learn of only one substantial objection to the compulsory registration of architects.

There are in all times and in all places a few geniuses. Now, most geniuses do not pass examinations, for if they did they would become commonplace in the process of acquiring the general knowledge necessary.

It is equally true that there are many, I might say fools, who can pass examinations. This is sad, but it is still more sad to contemplate this one isolated genius who might give to the world something worth the combined efforts of his contemporaries, frustrated by a license law or obliged to become the ghost or under dog of a less capable associate. Most laws in an imperfect world bear severely on some one. To save the discomfiture of this one genius, the opponents of registration have fought in England. Of course, if the examining body were really astute, they would let the genius slip through, but the perspicasity of examiners is not to be depended on, and genius is not always recognized at first sight. So much for the arguments against licensing. Now for the other side of the picture. Lawyers, doctors, dentists, druggists, plumbers all have to pass their examinations, but it was argued by the Institute of British Architects, that the architect is too much of an artist to be measured by examinations. At the same time the institute admits members to study in its school and finally to membership by this same process. Now, personally, I hate examinations, and do not take ten cents worth of interest in the man who can simply pass an examination. I care nothing about him—he frequently is a stick. The man we do like to meet, of course is the genius. But it is not the object of this examination to leave in the profession only the very clever. Why, if that were done, there would be left only a few architects for each large city, and none for the country towns. No, the object of these examinations is simply to determine that the individual has made a study of his subject and has a moderate and necessary knowledge, so that the public may not be led blindly by the blind. Under the system of non-licensing of architects, every Tom, Dick and Harry, including construction companies, is allowed to design buildings. In planning, they are generally poor, in construction, weak, and in the disfigurement of our streets and countrysides, they are triumphant. Choose between two evils: A stray genius, incommoded because a dull State Board is not smart enough to pass him at sight, and a whole army of incompetents let loose upon the public. Men, who in place of years of study and scholarly training or native genius, forge ahead by hustle and audacity and an unbridled conceit born of ignorance. No, rather than modify the license law I should like to see it made more comprehensive. In Mexico, not only are architects required to pass an examination, but no one is allowed to build, except the plans have been prepared by a duly qualified architect. No plans would be even looked at, if not so signed. This, I think, in our country, should be made to apply to all towns having a population of more than 20,000. But contrary to the assertions of the American Architect, the license law does wish to promote the cause of true architecture and to this end we must educate the public mind. Now the public cannot and never has been able to easily discriminate between good and bad architecture and good and bad architects, and the granting of a diploma at least helps them to discriminate between those who have *some* qualifications and those who have none.

The American Architect asserts that it is on principle that a number of the architects in this State, have failed to take out a license. Now, from considerable experience I should say that is nonsense. Some, I believe, who have been duly licensed and are quite competent have been disqualified simply because they refused or failed to pay certain dues. On this point, they may have stood out on principle, but not on the license law generally, but such cases are the exception. Most, who do not take out a license, fail to do so because they fear they may have difficulty in passing the examination. Now about the examination, I can speak from experience, for although I had practiced in this State previous to the passage of the Act, I was compelled on my return to take the examination, and I can say with assurance and after over twenty years experience among architects and draughtsmen, that the examination as set at the time in which I was subjected to the ordeal was not only a very well thought out examination and a good all around test on thoroughly sensible lines, but was quite the opposite of that, which almost any one could pass, as one might infer from the American Architect. In truth, it was an examination that without previous special study 50 per cent of the architectural profession could not have passed, as two out of four days were devoted to problems that could only be solved by carrying in one's memory formula that I am confident 50 per cent of the profession do not memorize. Space is too short to comment on this or other examinations. Sufficient to say that if an architect could solve all the problems in design, construction, detail and general knowledge in the four days allowed, and do so really well, he would be what is known as a crackerjack, to gain 100 per cent, I think would be the lot of one in a thousand.

I am presuming that the placing of the marks was done with as much judgment as the setting of the papers. Well, contrary to the suggestions of the American Architect, we insist that the object of the license law is to raise the standard in the profession and at the same time public taste and discrimination.

Let us look forward with the eye of imagination to the time when all states will have as one of their proudest boasts—a monumental building dedicated to the teaching of architecture and the kindred arts. Once a year, the golden-mouthed herald will be sent forth to make the annunciation, once a year, under the great dome, the dignitaries of the state and the learned in art, architecture and engineering will assemble and there in presence of a great host of the people, confer on such as may have won the distinction, the diploma of architecture. Teaching the people thereby that the distinction is one difficult to attain; that architecture is not house building, nor the honorable business of bricklaying, but a distinct and separate cult, one which demands and gives scope for as high qualities as any and in the following of which success (I do not mean monetary) is just as difficult to achieve as that high standard of ideality which with the eye of imagination, we may place before us, but may never hope to overtake.

* * *

The Reaper

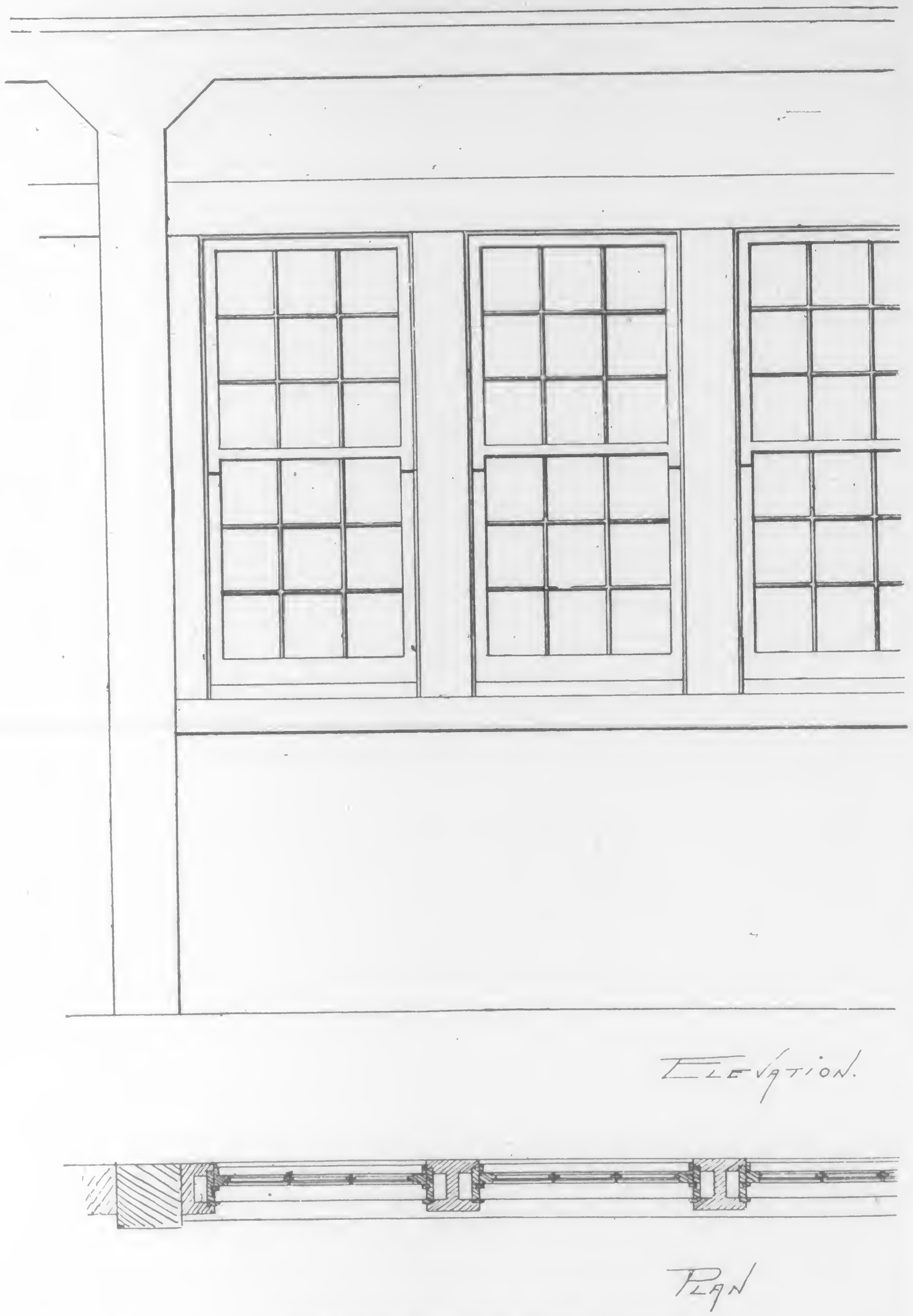
The youth who sows wild oats, 'tis true,
Must reap as he has sown;
But then his father ought to do
Some thrashing of his own.
—Philadelphia Press.

* * *

"I have three times as many applicants for apartments in my new flat building as I can accommodate," said the owner.

"How do you account for it?" asked the real estate agent.

"There isn't a room in the building large enough for a piano," explained the owner.—Exchange.



Concrete Factory Wall, Showing Window Construction

Cement and Concrete

Cost of Reinforced Concrete Building Construction

By LOUIS H. GIBSON, Architect, in Municipal Engineering

JAMES J. Hill, of the Northern Pacific Railroad and withal a great economist, statistician and brilliant writer on subjects of interest to the commercial world, has said that the end of fifty years will see the "Ironless Age." Maybe, but may not that period when there will be no metal be postponed through the use of cement? Mr. Hill, a very wise and very efficient man, may not have realized the possibilities in the use of cement as an economical agent and its relation to the saving in the use of metal. Many structures are built with cement and metal which do not consume more than three per cent of the metal that would be required if steel alone were used. Be this as it may, we find ourselves at the beginning of the "Cement Age," and near the beginning of a "Woodless Age."

The price of framing lumber is now such that one may well consider the question of the use of concrete and steel. There are conditions where the concrete-steel structure will cost less money and it always costs much less than steel with fire-proofing other than concrete.

This statement with regard to the relative cost of the materials named is not loosely made. It is based on an extensive practical demonstration. Some months ago the writer was employed as the architect of a large factory—a building 500 feet long and 187 feet deep at its wings. The material recommended to the owners was concrete-steel. The preliminary estimate from the office of the architect indicated slow-burning construction of wood to be more expensive by five per cent and the actual bids on the work by contractors indicated a greater difference than that shown by the preliminary estimate. The owners of the property, in their eagerness to be fully convinced that they were getting not only the best but the cheapest, had drawings and specifications made for joist construction with wood girders and posts, joist construction with steel girders and posts, slow-burning construction with planking, beams, girders and posts of wood, slow-burning construction with wood planking and beams and with girders and posts of steel. In connection with these various combinations, walls of brick and cement blocks were considered. In every instance, the comparison not only resulted favorably to the concrete construction in the matter of cost, but bred in the minds of all a determination that, from every point of view, the concrete-steel construction was superior. That is, concrete-steel is not only the best, but the cheapest. So it must be when a relatively new medium, structural or otherwise, comes into being, it must not only have superior merit, physically, as compared to other good things, but, in order to receive early recognition, it must be obtainable at a cost as low as or lower than the best competitive material. No product intended for the market can make rapid progress on any other basis.

It is not necessary to go into absolute details as to the cost of this structure in order to make a clear showing. It is sufficient to say that in the first figures the cost of this structure, as a concrete-steel building, approximated $42,000, in slow-burning construction of wood $45,000, and steel frame construction went well beyond this figure and this without fire-proofing.

The work of taking these figures and considering and making plans and specifications was educational not alone to the owners of the structure, but also to the architect. It gave him freedom and courage that he would not otherwise have had in dealing with a new client. So it was that from an early determination to contract all the work, it was eventually decided to do it by the day; to bring all of the material and put it in place by local labor under competent supervision. The result has been not only a high grade of workmanship, but at a cost well below that of any contract proposition. Broken stone, gravel and sand were obtained locally and the steel members purchased on the basis of specific requirements.

Before explaining structural details, it may be well to consider the question of insurance which was considered as one of the determining factors as to material of construction.

In this structure, the cost of insurance was considered before a shovelful of dirt was moved, and with astonishing results.

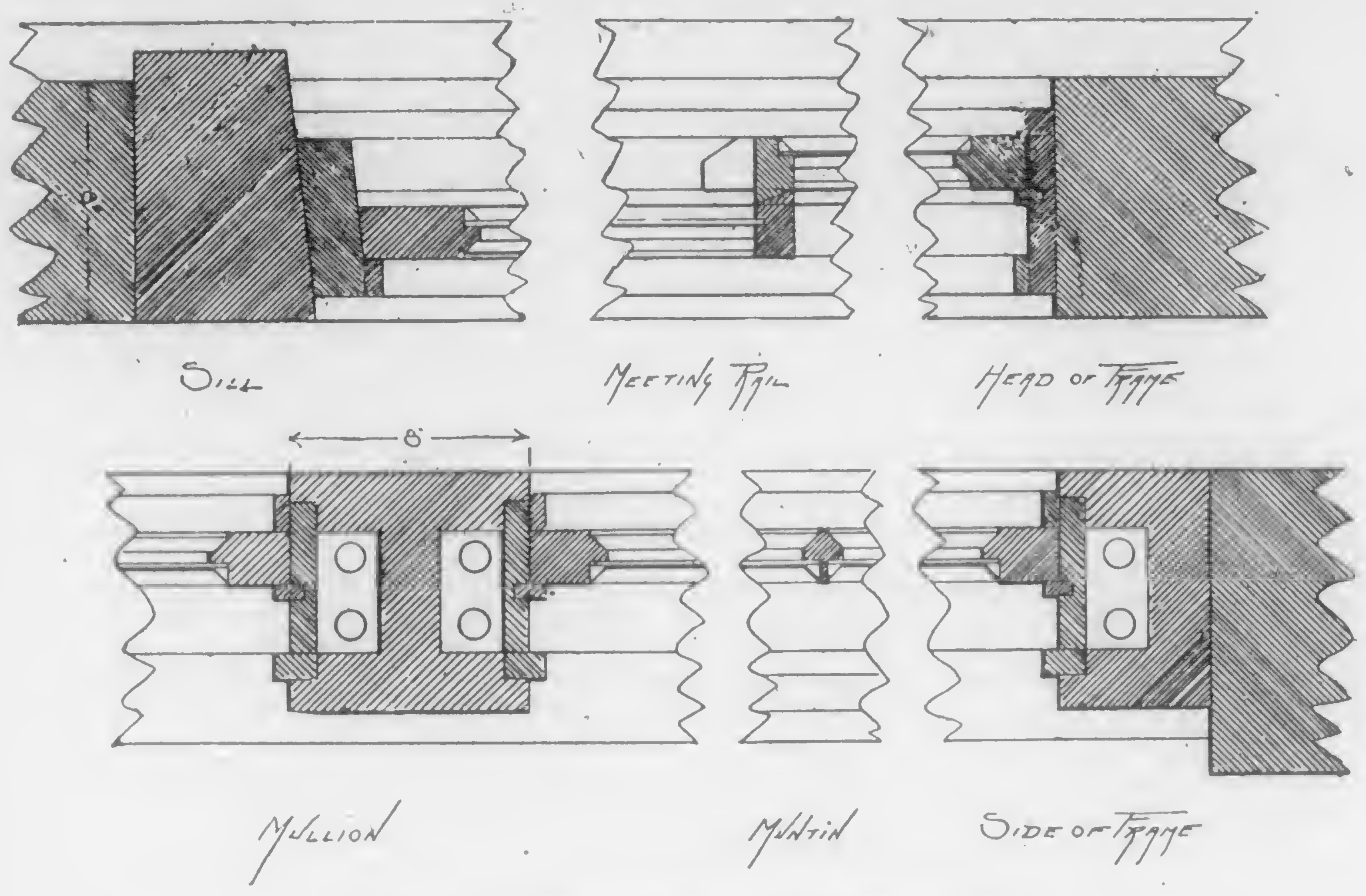
It is well to bear in mind in building that there are two elements in the insurance question, one of which relates to loss of property by fire, and the other which relates to loss of business. Again, it must be observed that there is a definite relation between the cost of insurance on the building and on the stock which it contains.

The owners of this property and their architect took no chances as to what the result would be. They met the managers of various mutual organizations with the purpose of having plans carefully examined and criticised from the underwriters' standpoint. The result showed that the insurance bugaboo is a bugaboo indeed, in so far as it relates to factory risks.

Estimates were made by the various organizations and indicated that it was up to the owners and the architect as to just what the insurance would cost. Under certain conditions of protection and construction the estimate was forty cents per hundred dollars at risk, and under certain other conditions, eight cents per hundred dollars at risk. The latter estimate was made by the Boston Manufacturers Mutual Fire Insurance Company, of Boston, Massachusetts, and was on a protected cement-steel structure. The actual disposition of the insurance has not yet been made, but here again the educational results of investigation through right sources was apparent. The owners of this property have determined to carry very little insurance on this risk and that largely on the stock. Here is a saving not only in the percentage cost of insurance, but also on the amount to be carried. This company has had the experience of being burned out before and is not apt to be indiscreet in this matter.

In this structure there was involved the work of the structural, mechanical and insurance engineer, and not the least of these was the insurance engineer.

In Indianapolis, the fire tax is twice as large as the municipal tax. The fire tax is made up of insurance and protection costs. It may be



Details of Concrete Setting of Window Frames

assumed that Indianapolis is not an exceptional instance but rather a typical one. This city is mentioned because the writer took the trouble to go to the city records and get taxables represented by improvements, and stocks in buildings and relate it to the insurance premiums and the cost of the fire department.

The fire loss in Indiana to the insurance companies alone and without relation to the insured or to the protection cost is about fifty-seven cents per $100 at risk. This, when compared with possible rate of eight cents per $100 at risk on a hazardous risk, shows that our immense fire tax is as unnecessary as it is wasteful. The fifty-seven cents loss to the insurance companies in Indiana is probably typical of the average loss in the United States.

It must not be assumed that cement-concrete construction alone is responsible for this saving. It was a very helpful factor, but is associated with protective apparatus. Again, this saving in cost is not wholly in terms of percentage, but as well by volume of insurance to be carried, which latter saving is largely owing to the use of cement. The Boston Mutuals have $225,000,000 at risk and their fire loss within the last five years has been less than four and one-half cents per hundred dollars at risk.

As said before, the labor work on this structure was done by the day. This gave an opportunity for careful analysis of results, and a chance to experiment which would not have been possible or desirable under contract conditions. The work of making concrete was particularly satisfactory in its results. There were no arbitrary standards of proportions of broken stone, gravel, sand and cement.

The voids were reduced to a minimum in the mixture of the aggregate, i. e., in the stone and sand, and the voids therein and proper excess was taken as the volume for cement. This made a particularly strong concrete as only the necessary amount of cement was used. The concrete was not weakened by using an excess of cement.

The voids were first determined in the broken stone or gravel and then the volume of the voids therein was supplied by fine gravel and sand, the voids remianing being the basis for the determination of the amount of cement.

Not only was the quality very satisfactory, but the cost was less than it would have been under the usual rough and tumble method of making concrete.

Before the engineering possibilities of concrete-steel work will have been determined, we must realize that the proportion of cement in concrete must be the lowest normal amount possible, and that the mixture of the inert material, the gravel, stone and sand in a manner to reduce the voids is quite as important as any other single process. The addition of cement may be normal or abnormal. There may be too much cement or not enough.

The walls of this structure are of concrete blocks. The window frames, as indicated by the drawing, are made with cement and wood. The advantage of a cement block in a window frame is twofold. It reduces the amount of wood to a minimum and gives a maximum amount of glass.

In the design shown, the separation is only eight inches. With a different design of frame, the separation would be at least ten and one-half inches and with an exposure of that much wood to the action of fire.

It will be seen that the weights for the sashes run up and down in the box formed in the cement. The cement box frame has great insurance value over wood or metal. An eight inch mullion of brick for box frame windows would not be possible. Again, the form of the cement part of the frame is admirable as a supporting column for superimposed weight.

The pully style and sash might be made of galvanized metal and in this way still farther reduce the fire hazard.

The cost of an all-wood frame and mullion and the combination of wood and cement is, under normal conditions, the same.

* * *

Advantages of Concrete

THE advantages of concrete on the mechanical side are these: It is proof against fire, wind and water, rats, insects and dry-rot and the danger of electricity. It needs no painting or repair. Fire or water overflow inside can do only local damage to the contents of a room and no more. It becomes stronger and harder with age. There are no leaky roofs, no damp or cold east or north rooms. There is great economy of heating. Being a firm mass throughout, like a house made of baked clay, there is no vibration, and in case one spot of the foundation should be undermined the well-knit structure might not show so much as a crack. It is practically earthquake proof. Concrete is healthful. It leaves no fissures for dust or for insects which spread disease. It is cool in summer and warm in winter, and with a minimum of exertion can be kept sweet and clean.

* * *

"Genius is the ability to take infinite pains!" Not a bit of it. Anybody can take pains, if he will. Genius is the ability to apply your pains in the right way and along the right line. Genius is the ability to discriminate.

Humbug in Reinforced Concrete Building

By WM. HAM. HALL, C. E.

The following is the first paper of a second series of "Talks to Property Owners," by Mr. Wm. Ham. Hall, apropos of the building situation throughout the larger cities of the United States, and specially applicable in San Francisco at this time. The title well tells what it is about. The matter will be eagerly read by those having civic pride and interest, as well as by those having buildings to erect, or who are in the building business.

THE scoring administered to San Francisco last April was opportune for the introduction of a new class of construction into this city; namely, reinforced concrete.

This type represents the long step forward made of late years in the building art. It is one of the two practical growths in building which have been along scientific lines. It stands for development of the building business on a higher plane. And it is, at the same time, the convenient stalking-horse of the building fakir.

Reinforced concrete is selected as the subject of these talks to property owners and citizens, not only because it is a comparatively new thing in building practice, and consequently a stranger to them, but because it is a good thing, peculiarly capable of being grossly abused and thus being made into a bad and dangerous thing, and because it is being so abused in many places throughout our country.

No other class of buildings can be made more safe and lasting than those of reinforced concrete. No other class of buildings may be so deceptively and utterly unsound and sure to have but short lives in proportion to cost, as those of reinforced concrete.

No other class of buildings, when well designed and constructed, will preserve their integrity so wholly and completely under earthquake stress, as those of reinforced concrete. No other class of buildings, being poorly designed and constructed, will tumble down so completely and disastrously under earthquake shock, as those of reinforced concrete.

No other kind of building of equal cost can be made so nearly fire-proof, as one of reinforced concrete. No other kind of building with right to claim fire-proof quality may be more utterly worthless after a fire has roasted it, than one of reinforced concrete.

In no other class of construction are incompetent people so apt to be cock-sure that they know it all, and so impressive in making others believe so, as in reinforced concrete. In no other class of construction may the property-owner be so grossly deceived by those with whom he may have to deal in the erection of his building, as in reinforced concrete.

Conditions in San Francisco are such as to invite the presence in the building industry of those who are apt to do this sort of thing. The outcome of such practice cannot be otherwise than dangerous to life, harmful to business interests and depressing to property values.

We seem to be entering upon a very carnival of reinforced concrete building. The work thus far is not all good. Some, at least, of it is distinctly bad.

In this regard San Francisco is not different from other cities in our country where such construction has been introduced, except in amount going on at one time. But we have only commenced our building carnival. If it develops as expected, it will become a wild rush. What then?

There is a consideration which we must not lose sight of. We have the reputation of being an earthquake city, and we are. We cannot move San Francisco away from the great earth fault not far to the west of us, which made our quake of last April; and sooner or later it will make other such shakes.

A notable reinforced concrete failure in San Francisco would attract much attention and do much harm not only to the cause of construction in concrete, but to the City as well. It is not enough that it might not be your building, Property Owner, which you think you have committed to competent and reliable hands. If there be failures of such buildings here, and it is the general opinion of architects, engineers and contractors now engaged on the work, that, in some cases, it will not take a very severe earthquake to cause them, they will cast doubt upon the integrity of other buildings of their kind, for a reinforced concrete building cannot readily be proven for what it is worth or shown up for what it is not worth, after it is built.

Abject, prostrating failures of reinforced concrete building are occurring now and again elswhere, without the aid of earthquakes. Our technical papers have given details and illustrations of half a dozen such failures within the past few months.

The public does not have its attention centered upon these lessons. Consequently, it does not learn them. The property owner, as a rule, seeks to build cheaper than he ought to, for the result demanded. Consequently, he is often an easy mark for some one who will deceive him as to the prospective cost, and the integral value of the proposed construction.

For a quarter of a century engineers have been preaching the merits of reinforced concrete. For that quarter century architects, in gradually diminishing numbers, to be sure, have opposed its introduction into building practice; while builders, as a rule, set their backs against it. Little by little; here and there; now and again, it has been advanced in public favor and use.

Its extreme adaptability and structural value were shown by engineers applying it in very thin and flat span bridges, very light and economical retaining walls, and dams and other structures. The position of those who were fighting its battles in city building practice was thereby upheld and justified. The art was much perfected. Engineering societies discussed carefully prepared papers as to its theory and practical application. Engineering periodicals gave space to accounts of its use. Architects became converts. Notable buildings were erected of the newly favored type. Public demand for its use grew. The spirit of commercialism saw its opportunity.

And now, after these long years of fighting, experimenting, demonstrating, on the part of the professional civil engineer; after volumes of accounts of details of practice, success and failure, which he has prepared; after other volumes of carefully worked out theories based on experimentation and practice, to guide future design, which he has produced; after the profession has had its attention centered on this subject, in theory and in practice, in good construction and in bad, in its various systems, parts and details, until to many civil engineers it is as a household word; the so-called "practical" man, the commercial man, and the patent-right man, the unprofessional amalgamated engineer-contractor and architect-builder, and the professional upstart assume to know more about this way of building than anyone else. These are they always who are most assiduous and frequently most successsful in getting the ear of the man who has the money to put into buildings.

The art of building in reinforced concrete is a civil engineering development on a high plane. If designing and supervision in the practice is turned over to people not capable in, or not implicitly faithful in such art, there will be disastrous results.

The official door was long closed against reinforced concrete building in San Francisco. There was strenuous opposition to its being opened, thought to come from interests involved in other building materials and methods. The architects as a rule were indifferent to the use of reinforced concrete. The builders, except a few concrete workers, opposed it or did not want to bother about it. Only a few engineers took active interest in the subject, though many appreciated it. The public knew nothing of it, and cared not at all. Were we not solidly and well built in brick and stone; and was not steel being well introduced and applied? The great earthquake, in shaking down brick and stone, shook the official door ajar for reinforced concrete. A small number of professional men, engineers mostly, stepped into the breach. The concrete workers were there also. The opening was effected. The new building ordinance, allowing reinforced concrete construction, was passed. And, forthwith, there appeared a multitude of reinforced concrete advocates, experts and specialist builders.

A number of these seem to have come from elsewhere, the new comer has an advantage in connection with a new thing. He can claim, whether truthfully or not, to have been practiced and expert in it elsewhere. He has no antagonisms among prominent local people, such as are unavoidably made by every engineer or architect who does his duty. The local public is not familiar with his shortcomings. He is received with special courtesy and attention just because he is a newcomer, introduced from some more advanced city, and vouched for by some local person of good standing. People under a great affliction are prone to look for a prophet. The prophet always comes from some other city. He usually is stoned if he sets up for one in the place of his home.

It is difficult for the layman to understand how local professional people could know anything about reinforced concrete, for instance, seeing that such buildings had not been constructed here. The layman often is guilty of not knowing the difference between a thorough engineer, who knows his subject as part of his profession and is a practiced man in that profession, from the mere technical worker, who knows his art only from the teaching of labor in it. The layman may forget that local engineers may go and by observation on works in a number of places become particularly proficient in a wide range of experience and practice in reinforced concrete or any other specialty.

The veriest fakir might come into a city as an amalgamated engineer-construction company, for instance, and victimize a number of prominent citizens by imposing upon them under contracts to plan and build for them. He might misrepresent, not only as to his own achievements elsewhere, but as to the practical knowledge of local engineers and architects of the subject he takes as a specialty. He might claim to control some patent device which he does not control. He might assert special worth as to some system whereby he builds, but which is known to the engineering profession to be grossly defective. He might show photographs of his creations in his last stamping ground; but how is the beholder, especially if non-professional, to know whether the structures are good or very bad, and likely to fail wholly or in part? He might show letters of satisfaction from clients he has built for; but how were they to know, not being professional, whether their buildings were structurally well or ill planned, or whether sound or rotten jobs? He might show complimentary press notices of his worth as a builder; but such ads are frequently bought. He would not show, of course, notices which had denounced him as a fakir, if such there were, nor would he show, if such was the fact, that the engineering profession knew him to be a shallow humbug. All these things might be done by a newcomer into a community, especially a city in business confusion and grasping for straws to float on. No one, of course, would feel called upon to expose such people, individually, merely to save individual property owners from being victimized. But after a while this sort of thing becomes a public menace.

By the close of 1906 over fifty permits had been issued, nearly all within the four months preceding, for erection of reinforced concrete buildings or large parts of buildings, under the new ordinance, and located within that part of the burned-over area, only, bounded by Van Ness Avenue, Eleventh and Channel Streets and the Bay front. This number is rapidly being added to.

About that time several engineers and architects called upon the Chairman of the Board of Public Works, and in a friendly way drew his attention to conditions with respect to reinforced concrete work being executed in the city, which they thought he should take cognizance of. The Chairman courteously acknowledged the truth of what they said, but feared he would not be able, under existing conditions, to correct matters. He promised, however, to do all he could toward ensuring good construction, which he desired as much as they.

At the same time, he reminded his callers that the Board of Supervisors, of which he formerly was a member, had acted on the recommendation of a committee of architects and engineers, in adopting the reinforced concrete part of the building ordinance, and he implied that if it did not work aright, those who had urged it, might be chiefly to blame before the public.

The Honorable Chairman's ground was not tenable, of course, for the best possible building ordinance may not work aright if it is not duly and efficiently administered. The object of such an ordinance is to vest in the city a supervision of such matters, and to lay the basis and provide the means for exercise of that supervision.

Already, some of the local opponents of reinforced concrete are predicting failure for it, and consequent expunging from the building ordinance. That ordinance is quite full in specifying what reinforced concrete shall be, how designed, how proportioned and how put in. Though the ordinance is far from perfect, if its provisions were even nearly complied with, under efficient expert supervision, the result would be safe and lasting work.

The Board of Public Works, whose duty it is to see that specifications in the ordinance are complied with, have not a nearly sufficient force of examiners and inspectors to do the work of this kind which the law and public safety demand shall be done. One inspector, only, is employed to see that the law is not violated in the process of construction of over

fifty reinforced concrete buildings, spread over a wide area, wherein he has also several hundred other buildings, of brick, stone and steel, to in like manner inspect. He cannot keep track of, much less efficiently supervise the work in progress in his field. He has the duty of at least four or five men imposed upon him, at least two of whom should be professional experts.

The situation in this regard is bad. It may be difficult to make it much better. It is a situation not unknown in other cities; only, it is accentuated here. The Honorable Chairman of the Board of Public Works says that he desires to do all he can to enforce compliance with the building ordinance, but the facts speak for themselves.

His records show that he has for months collected between ten and twelve thousand dollars per month as fees for building permits. This money, under the law, is collectible for examination of building plans and inspection of building work, and for no other purpose. It is a tax levied on owners who build houses, to be used for their mutual protection, as well as that of the public. The salary roll and expenses of the force employed on this examination and inspection duty, apparently cannot exceed ten to twelve hundred dollars per month—about one-tenth of the amount collected for the permits issued. The other nine-tenths seem to be devoted to some other purpose for which it was not collectible.

Before the passage of the present building ordinance, nearly all of the leading architects of the city were indifferent, if not quietly opposed, to the admission of reinforced concrete construction. In one way, the outcome to this time has shown they were right. The practical weakness of the system is in getting the work planned aright and executed well, and in getting an adequate municipal supervision of it.

A San Francisco can be built of reinforced concrete which would not be, at all materially, injured by an earthquake that would shake a brick and stone San Francisco as harmful as did the one of last April. A better brick, stone and steel San Francisco can be built than the one which we had. But it does not seem that a new San Francisco will be built under present conditions, of any material, that will be any safer under earthquake stress, or even as safe as the old. Something must be done.

Possibly, publicity might make for a better outcome. The owner, after all, is the party directly at interest, in each case. If he wants a safe building and pays enough to get one, the chances are that he will get it; that is, if he knows how to avoid humbug. If he has in mind to get the cheapest building which will serve his purpose, regardless of the building ordinance and public safety, possibly he might be influenced for good if his neighbor or any other passer-by were enabled to detect violation of the ordinance, or of good practice, in the building being erected on his property.

There are enough books specially for professional people in building practice. Possibly one for the owners and the public may not be amiss. There are enough books which show engineers how to build in reinforced concrete. Possibly, one which points out also how not to build in it may be of value to them.*

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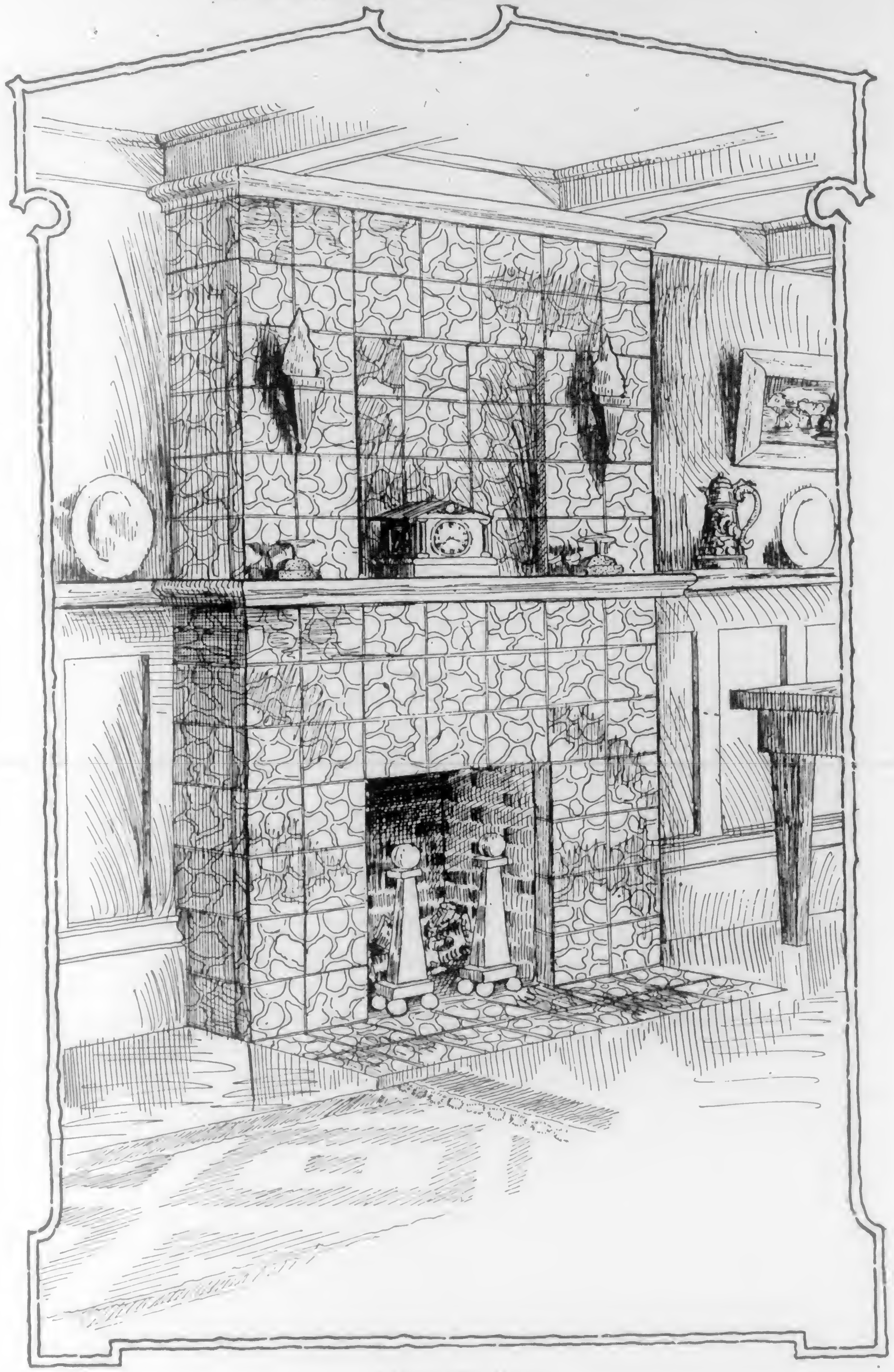
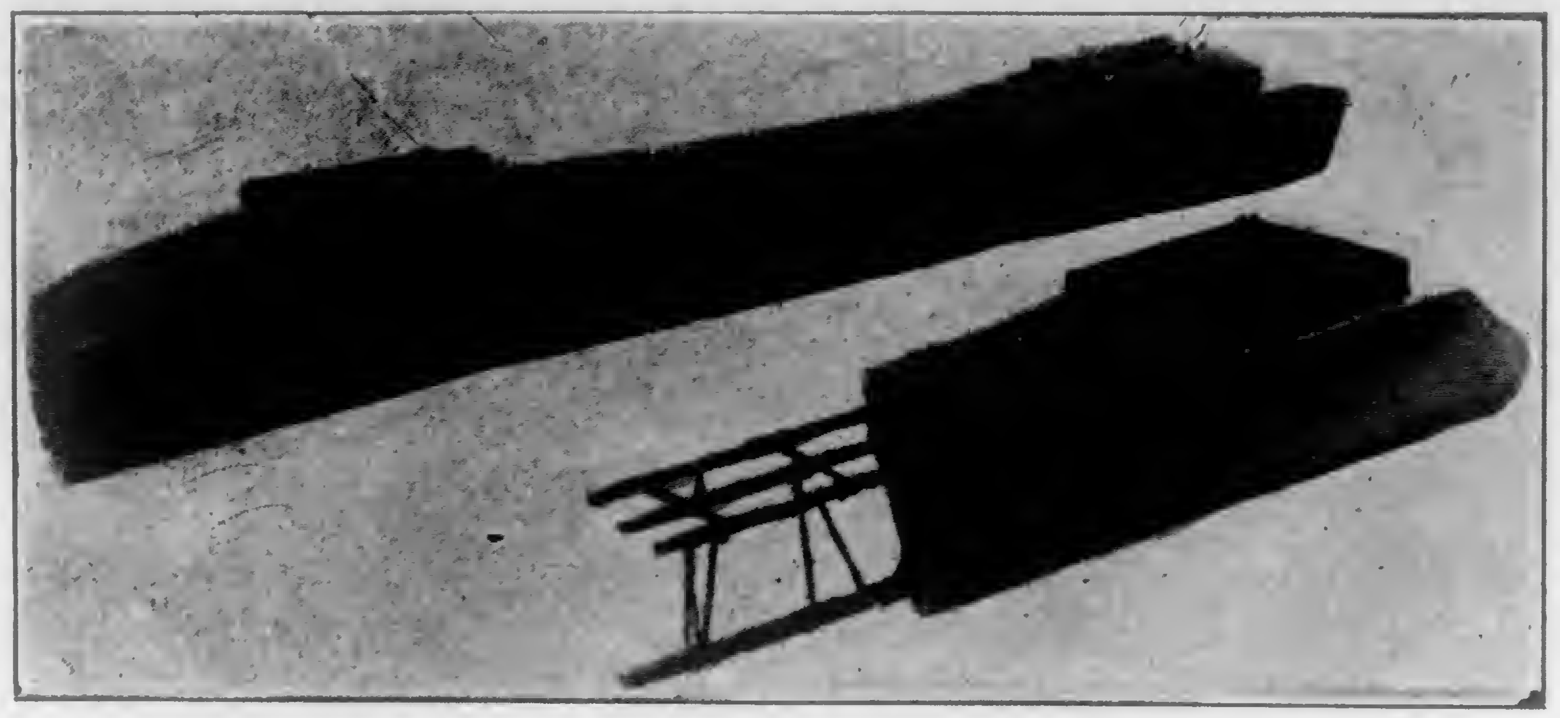
*This is the first chapter of an attempt at such a book. It will not deal in personalities, but will, without specifying buildings, tell of and illustrate bad as well as good work. W. H. H.



A Mottled Tile Mantel



The "Percival" Concrete Tie

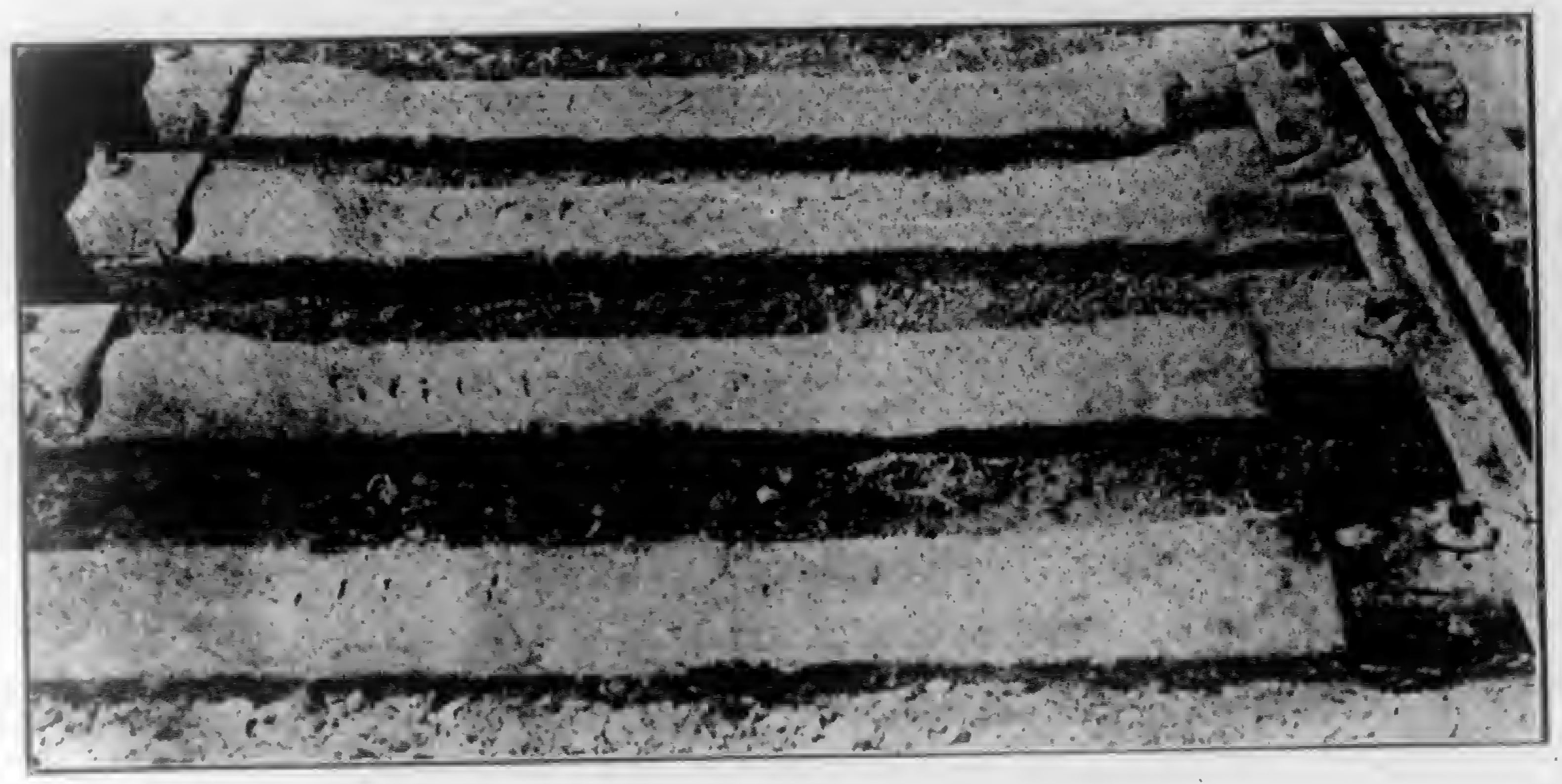
Concrete Ties for Railroad Use

DURING the past year no less than a dozen patents were granted to inventors of concrete railroad ties. There is much significance in the present activity of designers and inventors along the line of attempting to hit upon some form of tie which shall be better than the present wooden tie, more lasting and at least as cheap as those which are still in general use. It indicates a realization of the field which is already open for new forms of ties. Concrete in almost every conceivable form and combination has been suggested, but it seems to be the general feeling that the reinforced concrete tie is the type that will eventually be adopted.

A number of serious problems present themselves to the manufacturer who contemplates turning out a concrete tie for railroad use. One of the most important considerations is the matter of securing an absolutely reliable means of securing the rail to the tie. Even the long-tried and familiar spikes in wooden ties have by no means a clean record in the matter of holding, and spreading rails are still a source of uneasiness to every roadmaster and trackwalker. The rapid deterioration of wooden ties is a large item of expense and the cost of employing some means of wood preservation is open to the same objection of high cost. Reinforced concrete scientifically assembled, and with some reliable method of rail-holding, seems to be the thing sought.

One of the most successful types thus far made available is the "Percival," manufactured in Galveston, Tex., but capable of manufacture all over the country. It is made of reinforced concrete, the reinforcement consisting of four corrugated steel bars, weighing twenty-four pounds in all. These are made by the Expanded Metal and Corrugated Bar Co., of St. Louis, Mo., and are of the familiar type of product turned out by this house. As the cut shows, the body of the tie is in the shape of a triangle, with three bars across one face and the fourth at the angle opposite the heavily reinforced face. Each end of the tie is thickened for about 3 feet, giving an average bearing of about 5 inches. The central portion, however, is a true triangle.

Accommodation for the rail is provided for by a hardwood cushion, 1⅞ inches thick, 9 inches wide and 14 inches long. Sockets to receive the



Concrete Ties After a Year on the G. H. & H.

cushion are cast in the tie as it is made and this socket is filled with a rigidly connected composition of galvanized cut wire and Babbitt metal. A screw spike, 7/8x10 inches, screws down into this composition and holds the rail firmly to the cushion.

Practical demonstrations of this tie indicate not only its practicability but its permanence as well. Tests that have been made as severe as possible have shown the most satisfactory results. In the case of the Galveston, Houston & Henderson Railroad Company, the ties were put in the main line track at Forty-third street, Galveston, where all incoming and outbound traffic passes and where an enormous amount of heavy switching is done. After a year of service, giving the ties as heavy usage as possible, they were inspected and found to be in perfect condition.

* * *

Some Drawbacks to 100-Story Sky Scrapers

An eminent New York engineer and practical builder, who has to his credit many of the finest sky-scrapers of the metropolis, states that a one-hundred-story building, built of reinforced concrete and towering more than 1000 feet from the ground, may yet be seen by people who are living and even reached middle life. The fifty-story buildings, which are now being seriously considered as a future possibility, will constitute but a stepping stone to the seventy-five-story buildings and then to the one-hundred-story buildings. The principal drawback which now presents itself is said to be the impossibility of providing elevator accommodations for even a fifty-story building, for the reason that the weight of the cable to support the car in the numerous thirty-story buildings now in commission is enormous, and some other method of utilizing the upper floors will have to be invented and introduced before the sky-scraper can be built any higher. The limits of the elevator, as understood at this time, have been already reached.

* * *

The spirit of looking on the bright side of things is all too rare in this day and age; hence all praise to the old lady who was so old that she had only two teeth left, but said, "Thank God, they hit!"

Fire Protection

Fire Resistance of Reinforced Concrete Buildings*

By JAMES SHEPPARD, Chairman of the International Fire Library

ALL practical fire fighters will, in view of their own experiences, unanimously agree that the fullest success in fire fighting can only be secured by vigorous attacks at close quarters inside the burning building. Unless in some measure such close attacks on the discovery of a fire can be made with ample volume of water at efficient pressure the building involved, especially if of large extent, will probably with its contents be destroyed, and the prevention of the spread of fire to the surrounding property may become both difficult and dangerous. Buildings erected to meet these requirements have lamentably failed under the tests of actual fires, chiefly owing to noncompliance with conditions obviously necessary to secure success.

To avoid such disasters, buildings effectually separated into compartments of moderate extent, planned without unprotected floor openings and constructed so as to give ready and secure access for firemen to every part, for the longest period of time possible after an outbreak of fire, are required, both in the interest of the public and of the chief officers of fire brigades and salvage corps and the men under their command. Buildings constructed with reinforced concrete, properly prepared with suitable aggregates, sand and cement, ample thickness of such concrete being continued in front of all metal rods or network, will satisfactorily meet these requirements if the conditions as to extent and other provisions referred to are duly observed.

So-called Fireproof Buildings

Experience has repeatedly proved that large buildings constructed with incombustible materials only, but without due protection against the inevitable action of heat, fire and water on the metal and other materials used, although called "fireproof," are during the burning of their contents of a most treacherous and dangerous character, defying all reliable calculations as to the time and manner of their certain collapse.

Why architects and engineers continue to waste their client's money on the erection of dangerous buildings of this character and proclaim them "fireproof" is a mystery which firemen fail to comprehend. It cannot be too strongly asserted that it is false economy of the worst description to omit efficient protection against the action of fire for all structural metal work used in important warehouse and factory buildings.

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* Extracts from paper read at the Milan International Fire Congress

In view of the experience in the case of buildings constructed with unprotected metal columns and girders the use of timber in posts and beams of large size, witn thick plank floors made air and water-tight, has been extensively employed with considerable advantage, especially where protected with an efficient system of automatic sprinklers. Further advantage would be secured if the timber used is made thoroughly and permanently flameproof, but effective processes with this object appear at present to be too costly for general use.

The term "reinforced concrete" is used to describe systems of construction in which iron or steel, in the form of rods, bars or network, is embedded in concrete, both horizontally and vertically, so as to take all tensional strain and offer resistance to shear, leaving the concrete to resist compression, thus uniting both materials, so that each is applied to the best advantage.

Previous methods of fire resisting and slow burning construction, especially for warehouses, trade and manufacturing premises, are now rapidly giving place to reinforced concrete systems, used either alone or in combination with hollow reinforced concrete or porous terra cotta blocks. These systems, it is hoped, will enable architects and engineers to meet conditions necessary to obtain resistance to fire.

A Safe Structural Material

Reinforced concrete is claimed by its advocates to be a safe structural material, but this can only be conceded so long as normal conditions continue, which many users of these new structural methods appear to consider will always be the case, and therefore make no provision against possible if not probable changes resulting from fire amongst the goods stored in buildings of this construction.

The materials employed in reinforced concrete acquire no new fire-resisting qualities, and although they may be made effectively to assist each other in this respect and offer every facility for providing a building of the character needed in the interest of the public and of firemen before mentioned, it is necessary to secure such qualities duly to consider and provide against the effect of heat, fire and water on the materials employed, using only materials and methods proved from actual experience under various known conditions to be effective. This is equally necessary with reinforced concrete systems, as with other methods of construction, if satisfactory resistance to fire is expected, and the avoidance of disasters that have occurred with other systems desired.

The city of New York Building Code, 1901, provides that all systems of floor construction used in buildings required to be "fireproof" shall be submitted to an official test for four hours under a distributed load of 150 pounds per square foot placed on bays four feet wide between steel beams ten inches deep, weighing twenty-five pounds per foot run, having a clear span of fourteen feet, these beams being protected in the manner adopted by the system under test, the temperature to average not less than 1700 degrees F. for the whole period of the test. At the end of this four hours' heat test a stream of water through 1⅛ inch nozzle, under sixty pounds pressure, to be applied to the under side of the floor for five minutes; the top of floor to be then flooded with water under low pressure, and the stream from the 1⅛ inch nozzle, under sixty pounds pressure, again applied to the under side of the floor for a further five minutes.

A load of 600 pounds per square foot to be then placed between the beams equally distributed.

If during these tests any flame has passed or any part of the load has fallen through, or if the maximum deflection of the beams, having a clear span of fourteen feet, exceeds 2½ inches, the use of the system is prohibited in any building required to be "fireproof." Similar test regulations are also applied to partitions.

Experts in reinforced concrete buildings agree that to obtain the best results (considered only from a structural point of view and under normal conditions) reinforcing rods must be placed near the outer surface of the concrete, a thickness of one inch in front of the rods being generally adopted; but this thickness is altogether insufficient for the protection of metal rods against a serious fire, and the aggregates, sand and cement, for the concrete used to protect the metal rods are of the greatest importance.

It has been conclusively proved that concrete having gravel aggregates is especially unreliable under the action of fire, and the same may be said of other dense material. Aggregates that have passed through fire and are of a porous nature, such as broken stock brick, clinkers, clean coke breeze with fine ground, high class Portland cement and sand, offer the greatest resistance to fire, but even with these materials a thickness of at least two inches in front of all important metal members is essential for reasonable security.

There would be no difficulty in applying a thickness of two inches of concrete of this description for the protection of all metal work, while the central portion of the concrete might be of different material.

It is to be feared that some of the large buildings already erected with reinforced concrete will fail when subjected to a serious fire amongst their inflammable contents, especially in cases where the building chiefly consists of extensive galleries round large central vertical spaces passing through all floors. Such buildings certainly involve the possibility of very serious consequences, as proved in numerous instances, and even reinforced concrete construction can do but little to lessen this evil.

The method adopted for protecting columns and other parts of reinforced concrete structures against mechanical injury during the making and deposit of merchandise is of the greatest importance. With this object, in many large public warehouses constructed in reinforced concrete, steel angles of considerable size and weight are partly embedded in the concrete flush with its outer face at each corner of numerous square columns supporting very heavy loads; these steel angles are held in place by riveted eyes passing into the concrete. In the event of a serious fire amongst merchandise stored round these columns these steel angles would twist, displacing portions of the concrete, leaving important reinforcing rods exposed at most critical moments. Any mechanical protection needed should be held in position independently of the concrete and be placed against its outer face only.

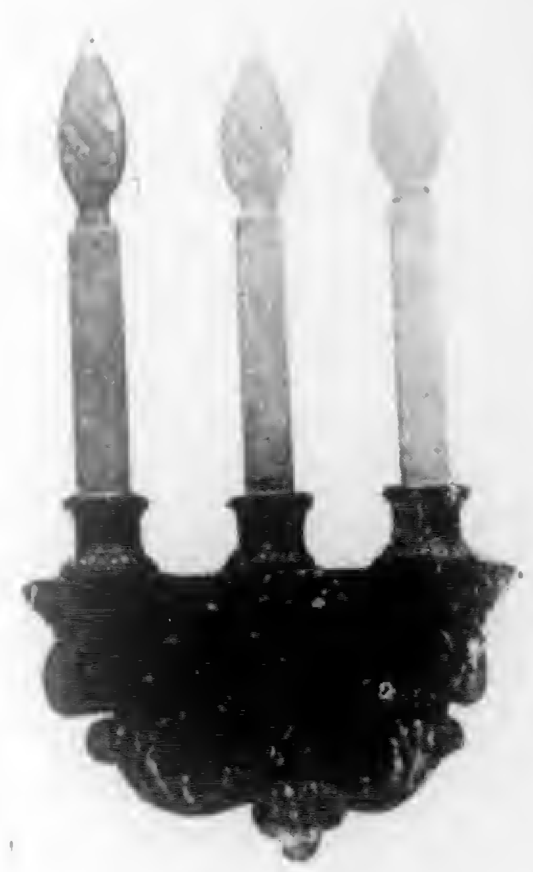
Divisional walls relied upon as fire stops in warehouses and similar buildings should not be less than nine inches thick.

Combustible goods against a reinforced concrete wall less than nine inches thick would be liable to ignition by heat from a fire burning on the opposite side of the wall.

The Modern Lighting Fixture and Its Place in Interior Decoration

By JOHN A. BRITTAIN, President of the Pacific Gas and Electric Company

"A dim light say you? I faith, my lord, 'tis that, but should the King so honor us, we have no better."
—Shakespeare



WHAT exclamations of surprise and admiration would have burst from the writer of the above had he the opportunity today of visiting even the humblest homes and noting the abundance and in many instances, the extravagant use of artificial illumination.

Nothing in history is more interesting than to note the progress in artificial lighting and it is a noticeable fact that as the nations of the world advanced in civilization their lighting appliances kept pace with them. Notice the pine torch giving way to the candle and in succession to the oil lamp, gas lighting, electric lighting and this latter illuminant striving, today, to excel its strong competitor, the incandescent gas light, as discovered by Auer Von Welsbach.

It is not our desire to trace the advancement as above noted but rather to consider the means of artificial illumination placed at our disposal today and study their best uses for residence and commercial lighting, not only from the standpoint of efficiency and economy but also have a thought for the decorative effect.

The first gas fixtures were pieces of gas pipe bent in the shape of a T with no thought of beauty. A little later we note the addition of applied ornaments to "dress them up," as it were. After this, the pipes were incased in brass tubes and later, at the introduction of electricity, the wires were fastened to the exterior of the fixture and today we have the combination gas and electric fixture, with both gas pipe and electric wires concealed. At the introduction of the incandescent gas light an obstacle presented itself, as far as the beautification of the fixture was concerned, on account of the ugliness of the porcelain reflecting shade. This fact is itself evident today but it is being corrected by the introduction of the "Bunsen Fixture," a chandelier made expressly for incandescent gas lighting and which obviates the use of what has heretofore been considered an ugly necessity. The socket burner, and ingenious gas burner that looks like an electric socket, did much to improve the appearance of the gas fixture as it made possible the execution of beautiful designs heretofore confined to the realm of electricity.

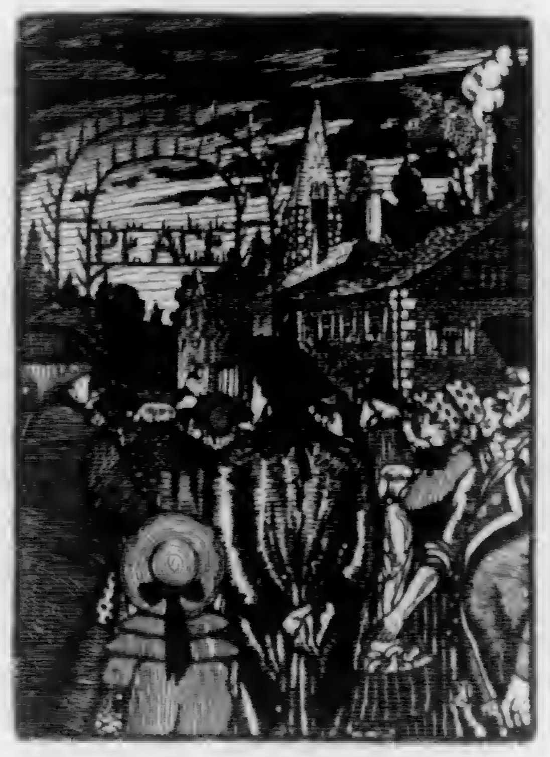
Within the past year a lighting magazine has made its appearance in New York and is doing much to fill a void in the field of illumination by furnishing to the architect, decorator, gas fixture salesman and others interested, helpful suggestions as well as giving scientific experiments and enabling them to lay out a lighting scheme much more intelligently by showing the result of various types of illuminants under stated conditions. It is also encouraging to note the fact that a few men have taken up the practice of the New York magazine and are prepared to give us the benefit of their research which shows that our Eastern friends are beginning to realize the importance of the subject and will profit by the employment of these men from an economical standpoint, to say nothing of the pleasure of having properly lighted stores, offices and homes.

The lighting fixture of today should be an ornament rather than a self-evident ugly necessity. It is this feature of the subject I should like to lay particular stress on.

The best results in lighting are obtained by those, who, in planning their homes, give the subject proper consideration, by trying to picture in their mind's eye, the room as it will appear when furnished, noting where the strongest light is needed, arranging their outlets so the greatest efficiency can be obtained at the least possible expense, bearing in mind that a few dollars spent in wiring will be repaid tenfold by the saving in the monthly lighting bill.

There are so many conditions that effect the amount of light required in any room, such as color of wood work, wall covering, height of ceilings, to say nothing of the needs of the occupants, that it is impossible to make a rule to meet all conditions but if a 16 candlepower lamp burning with its full efficiency is allowed for every 1000 cubic feet of space it will cover the majority of cases, bearing in mind that the efficiency of a light at any point decreases as the square of its distance increases, in other words you get but one-quarter of the light at four feet as you do at two feet from its source.

If architects, when about to write specifications for the lighting of any building, store, office, theater or residence would before placing outlets, divide the illumination into two parts: First, General Lighting; second, Special Lighting; and give each ample consideration, much better results would be obtained. To make this point clear let us consider a few examples.



Theaters.—General illumination best obtained by lights concealed so that the light is reflected from the ceiling and the filament of the lamp not seen by the audience. This can be obtained by putting them in a trough in the arches with their backs to the audience.

Special Lighting.—Foot-lights, orchestra lights, boxes, etc. Offices: General illumination, ceiling fixture or chandelier in center. Special illumination: Desk lights, typewriter lights, etc.

Residence.—Living room: General illumination, ceiling fixture in center. Special illumination: Reading lamps, reading brackets, bookcase lights, etc. Dining room: General illumination: Side brackets are much better than arms, outside of center dome. Special illumination: Dome with diffusing plate much better than using fringe.

Before passing, let us call attention to two errors generally made in residence lighting. The first is the placing of an overhead light to illuminate a carriage porch, as it places the step of the carriage in the shadow while a side light would illuminate it nicely. This also applies to an overhead vestibule light, as it casts a shadow over the countenance, while a bracket light would overcome this difficulty and the advantage of this is self-evident. The second error is the placing of a light on either side of a mirror where it is desired to get a good light for dressing purposes. Much better results would be obtained by an overhead light placed about ten inches in front of it and just high enough not to interfere with the person using the mirror.

All the above refers to the practical side of lighting but much more could be said of the artistic.

From a lighting standpoint the most successful installations are those where you feel plentifully supplied with light and the source of it is no more conspicuous than any other part of the furnishings.

What better time to consider this important subject than now when we are about to rebuild the city. What vast opportunities to get the benefit of all our past experiences and profit by our errors!

This can only be brought about by the hearty co-operation of our architects with the people making a study of this work. If the power companies would place at the disposal of the architects, or any one interested, the services of a man who is competent to advise them on this important subject they would be doing much to rebuild San Francisco on the right lines. I say the power companies could do this as they would be acting from a purely unselfish motive and would be repaid by the appreciation of a satisfied clientage. San Francisco is going to be rebuilt nobler and grander than ever. Why not light its homes and buildings consistent with their construction?

* * *

About Smokeless Furnaces

NEVER has greater interest been shown in the kindred subjects of smoke abatement and fuel economy than at the present time, and this brings to mind how surprisingly ignorant some men are as to the requirements of a smokeless furnace. It is not a difficult task for any fair engineer to build a furnace in almost any plant, which will not smoke, but in most cases the cure is worse than the disease. The difficulty lies in the construction of a furnace which will not only be smokeless but economical; in securing the proper combustion so that the elements which produce smoke will be consumed without the introduction of too much air or the use of other agencies which would tend to reduce economy. In buying a smokeless furnace see that it not only prevents the emission of dense smoke but does it with a minimum loss of economy—Ex.

* * *

High Ground

The moral ground some men are found
To take is high enough;
But, after all, the highest ground
Is frequently a bluff.
—Philadelphia Press.

The Ingenuous Bricklayer

Some Builder's Laborers once waxed hot
About the Hardships of their Lot,
And with Abuse did thickly plaster
Their grinding and despotic Master.
'Twas Jones, a Layer he of Bricks,
Most fierce denounced that Tyrant's Tricks,
And cursed the Wretch Who'd have them lay
Eight hundred Bricks (Oh! Shame!) per day.
"Say, let's agree to lay no more
Henceforth, my Mates, than Hundreds four."
Now Jones, who this Suggestion made,
Was still a Novice at the Trade,
And *then* four hundred Bricks a Day
Was just as much as he *could* lay.
But as the Months progressing ran,
Jones, who's a quick and handy Man,
Outstripped his Mates and soon could lay
Four hundred Bricks in half a day.
'Tis now the Wish our Friend did take
Double his present Wage to make;
So he the Limit would rescind
Which stringent thus his Efforts pinned.
But lo! His Mates, who—sad, but true!—
Were still a lazy, unskilled Crew,
With Insolence and loud Derision
Declined to hear of such Rescission:
"What next? The Compact—Truth to tell—
Us Duffers suits amazing well,
Nor do we mean such Fools to be
As now to cancel it for thee,
Just 'cos thee's gotten extra Skill
And wants thy private Purse to fill.
Naw! Thee *shan't* rise above our Level,
And if thee tries, we'll raise the Devil!"
Then Jones, with rueful Face, did see
The Vice of forced Equality:
"I know—alas! too late—such Rules
Protect but Lazybones and Fools,
And, leveling up the unskilled Clown,
His Mate more skillful level down!"

MORAL:

'Twixt Right and Wrong, 'twixt False and True,
How much depends on Point of View!
—Truth.

English Cathedrals

THERE is nothing among all the many beauties of England that appeals so strongly to man's poetic nature as her cathedrals. Indeed, there is no other land where the cathedrals and churches are so beautifully and distinctly a dominating feature in the landscape as in England, and the English people love them.

> "Each in its little plot of holy ground,
> How beautiful they stand,
> Those old gray churches of their native land."

Unlike the cathedrals of continental Europe, most of which are hidden from view by shabby shops, and overwhelmed by the mercenary war of a great city, there emanates from the English cathedrals the peace and calm spirit of the Christ, and they beget a reverence in the soul of the beholder that softens the voice so near to silence that the soul seems hushed in prayer, and reverently awaits the benediction of its Maker.

Nothing as an accessory is so beautiful as their setting amid the peaceful surrounding of the "close," for the very peace of God abides there. Visit Wells; pass up from the railway station, following the main street to near its end, then turn to the left and pass through a low, deep arch of ancient masonry. Step out upon the cool green beauty of the "close," and there bursts upon your vision the wondrous beauty of the west front of Wells Cathedral. Instinctively, you remove your hat and can scarce refrain from falling on your knees in reverential worship.

> "And 'tis for this they stand,
> The old gray churches of their native land."

But through the passing centuries "the walls have crumbled, the stones decayed," and it creates a feeling of sadness to look upon their fading beauties amid the decay caused by their lengthened years, and the time has come when they must either be repaired or be closed to worship.

* * *

Poorly Lighted Hallways

MANY buildings make the mistake of having their halls poorly lighted. Light costs money, but it is poor economy to try to save it by darkening halls. A well lighted hall presents a more cheerful appearance, makes it easier to find names and numbers on the doors, prevents possible accidents in entering elevators or descending stairways, while dark, poorly lighted hallways will have an opposite effect.

Some properties which are very well lighted during the day turn off too much light after business hours. The only thing to be considered here is the matter of safety. So long as there are people in the building there should be enough light to enable them to find their way to and from their offices without difficulty. One case comes to mind of a tenant who worked in his office until after the elevators had shut down and was obliged to descend the stairs. The halls were poorly lighted and he slipped on a banana peel which had been carelessly dropped on a stair ledge with the result that when he reached the bottom he was sore in body and spirit and considerably used up. The remnants of his watch, spectacles, etc., figured prominently in the damage suit which followed.

Brick Demand Grows Larger

AN authority on building materials has made an investigation to determine if, as generally claimed by many advocates of reinforced concrete construction, concrete has superseded burnt clay in modern building operations. The investigation covered current building operations in many states, and the facts gathered show that as yet concrete has made no inroads on the demand for bricks, tiles and other burnt clay materials. Concrete in its best form is admitted to be a desirable building material, but is unsuited for many types of construction. Wood because of its increasing cost is being slowly eliminated as a building material, and to a large extent brick and concrete must supply the place it has previously held in building operations. In the increasing demand for a substitute for wood the products of the modern clay working plants will stand more than an even chance.

As was pointed out by many of the delegates to the congress of architects, recently held in London, concrete is still an unknown quantity. It may be anything from one part cement to two parts gravel or cinders or one part cement to twenty parts of other materials. There are no recognized standards in concrete today, and we have an unprecedented record of failures in its use. The mere relative cost of the two materials will not, we believe, be a serious factor one way or the other, for there is really little difference between the cost of good concrete and of good brick work, the odds being on one side under certain conditions, and on the other under different ones, although it is pretty safe to say that first-class concrete would be fully as expensive as brick work. It is, therefore, merely a question of choice of materials.

Notwithstanding the unprecedented and well-directed efforts made by the concrete interests to secure a demand for their materials, and the very liberal employment of concrete by architects and builders throughout the country, it is nevertheless a fact that this year has been the largest in the matter of production and sales ever known in the burnt clay industries.

Nearly all of the pressed brick manufacturers of the country have been running their factories night and day to keep up with their orders. The output of architectural terra cotta has nearly doubled. Burnt clay fireproofing plants are doing more business than ever before in the history of this industry. Single factories are now producing as many enameled bricks as put forth by all of the factories combined a few years ago.

The use of roofing tiles has grown far beyond the experimental stage, and is a thriving, growing business, while one need only follow the illustrations in the architectural magazines to appreciate how rapidly faience for both interior and exterior work has grown in favor among the best architects in the country.—Clay Worker.

* * *

Mrs. Firstfloor—"I called to speak about your daughter's playing. I——" Mrs. Secondflat—"Now, look here; she'll play just as loud as she likes. See?" Mrs. Firstfloor—"That's what I was going to ask for. You see, I'm going to give Willie a whippin', and I don't want folks to hear him holler."—Chicago News.

Causes of Varnish Cracking

"TECHNO" in writing upon the subject of the cracking of varnish in the Decorator says: "So much has already been said on this subject that it will only be necessary to summarize here the causes and their avoidance. Various causes produce cracks of distinct character. The addition of terebine to a varnish for hardening will often cause cracking, especially when exposed to direct sunlight. These cracks at first give the varnish a silky appearance, due to their hairlike fineness and great numbers. Subsequently many of the cracks open out wider under atmospheric variations. But the crack due to terebine is always sharp and clean, and mostly straight, as though cut with a razor edge, crossing the work in all directions. Terebine is sometimes used in graining color and in other undercoats prior to varnishing. In such cases the cracks will show their origin to be in undercoats by the depth of every crack, while if the varnish only be at fault the undercoats will in many parts remain unaffected.

"The application of any hard quick drying coat of paint or varnish on a soft undercoat is liable to cause cracking, and would affect any supercoat likewise. This may sometimes be traceable to a glaze coating prior to varnishing, to a goldsize and turps flatting coat on an oily ground or to a hard drying varnish on a soft groundwork. Goldsize cracks are distinguishable by their usually lying in the direct line of the brushwork, and having soft round edges, turning inwards, the cracks being less numerous but more open than terebine cracks.

"The application of a coat of size upon a hard non-porous ground prior to varnishing, such as sometimes occurs when re-varnishing old work in cheap jobs, if the size be fairly strong, will sometimes result in cracks, the cracks being notably of polygon shape and the edges having a tendency to curl outwards.

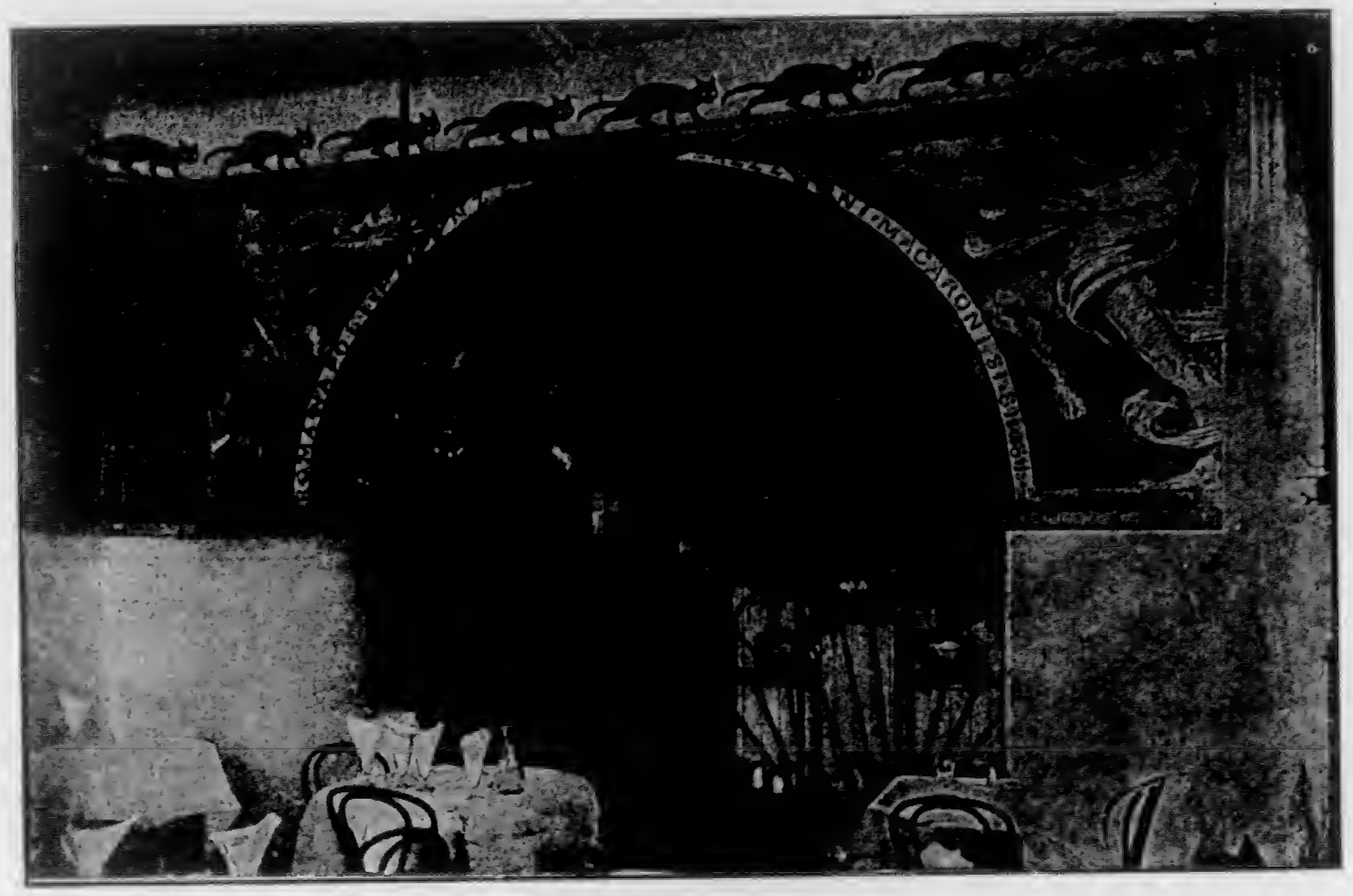
"Cracking sometimes occurs only where knots exist in the woodwork. That is generally due to the preliminary use of too much shellac or patent knotting, destroying the porous key of the wood, leaving no hold for the priming coat. As no affinity exists between the shellac and the oil paint, the latter cracks by irregular contraction and expansion of the paint and the wood. The remedy is to scrape down to the bare wood and to paint again without fresh knotting, or after a thin coat of reduced strength, in case of new woodwork.

"To avoid tendency to cracking, there is no better course than to take care that every coat prior to varnishing be thin, and allowed to dry hard before applying the following coat. It is important also that no quick drying medium, such as goldsize or terebine, be employed in painting over a coat mixed with ordinary linseed or boiled oil, though the reverse order may be employed without danger, and in case of quick drying paint being necessary, employ no oil at all, excepting for the priming coat on new wood, and the finishing varnish may then be elastic or hard as desired without danger of cracking. A hard varnish may be used as an undercoat, and an elastic finishing over varnish over that. But the reverse order may give rise to the fault under notice."

* * *

Sleep and the world sleeps with you. Snore and you sleep alone.

Interior Decoration



Decoration by Robert Aitken

San Francisco's Famous Bohemian Restaurant*

By MABEL CROFT DEERING

Eeny, meeny, minee, moe,
A fig for Care and a fig for Woe.

IMAGINE two attenuated figures sitting at a table, one of them holding up two fingers, not for Zwei Bier, alas! but for two figs which a waiter bears aloft on a spinning tray—all that poor Care and Woe can afford!

In such delightful foolery have the wall frescoers at Coppa's, San Francisco's famous Bohemian restaurant, been done. There is no central idea; there is no general scheme of decoration. Everything was done just by chance and on the spur of the moment, and no panel has anything at all to do with any other panel. On the one next to dull Care, for instance, is a very rotund man eating macaroni underneath the legend, "Paste makes waist."

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* Written for and published in The Critic, to whom we are indebted for this interesting description of the unique mural decorations of this famous restaurant. The restaurant is still in existence, the building surviving both earthquake and fire.

The mural decoration of Coppa's is a delightful illustration of the amateur spirit, for the entire work was a labor of love. The story of it is interesting. Coppa is a fat and locally famous chef who learned the divine art of feeding in Turin, with a postgraduate course in Paris. He came to San Francisco years ago by way of Guatemala, where there are many good appetites. For a while he cooked at Martinelli's, the Italian cafe in San Francisco's Latin Quarter, where many gourmets gathered in an older day, and where Paderewski always dines when he visits the far West. From there Coppa went to the Old Poodle Dog, and at last set up in business for himself. Though a past master of the cuisine, his business was not as successful as his ragouts. Something seemed to be the matter.

In all his wanderings through other men's kitchens, however, there was one faithful little coterie which followed Coppa, and when he finally settled in a tiny place of his own these faithful ones became the nucleus of his trade. They were artists and writers for the most part, many of them members of the Bohemian Club, and though they were not rich they were appreciative.

One day about a year ago the Bohemian Club gave an exhibition of fine photographs, which were displayed on a screen of fine cartridge paper twenty-five feet long by ten feet high. The day after the pictures were removed from the screen a number of Bohemians worked far into the night ornamenting this virgin surface with grotesque caricatures of club members. Some of these were pleasant and some of them were not, but they made a sensation. The material used was kindergarten chalk in various colors.

That night at Coppa's one of the artists remarked to Felix, Coppa's young and good-looking partner, "It's fearfully dark here, old man. Why don't you have some light?"

"We're going to," said Felix. "We are going to have new paper and more lights and be fixed up fine."

"Great," said one of the fellows. "Get gray paper, Coppa, and we'll fix it up for you. Like the screen," he remarked to his table companions.

One Monday when the faithful came to dine they found the little Montgomery street cafe lined with hideous bright red paper with an impossible molding of red and gold, and Coppa rubbing his plump hands with delight.

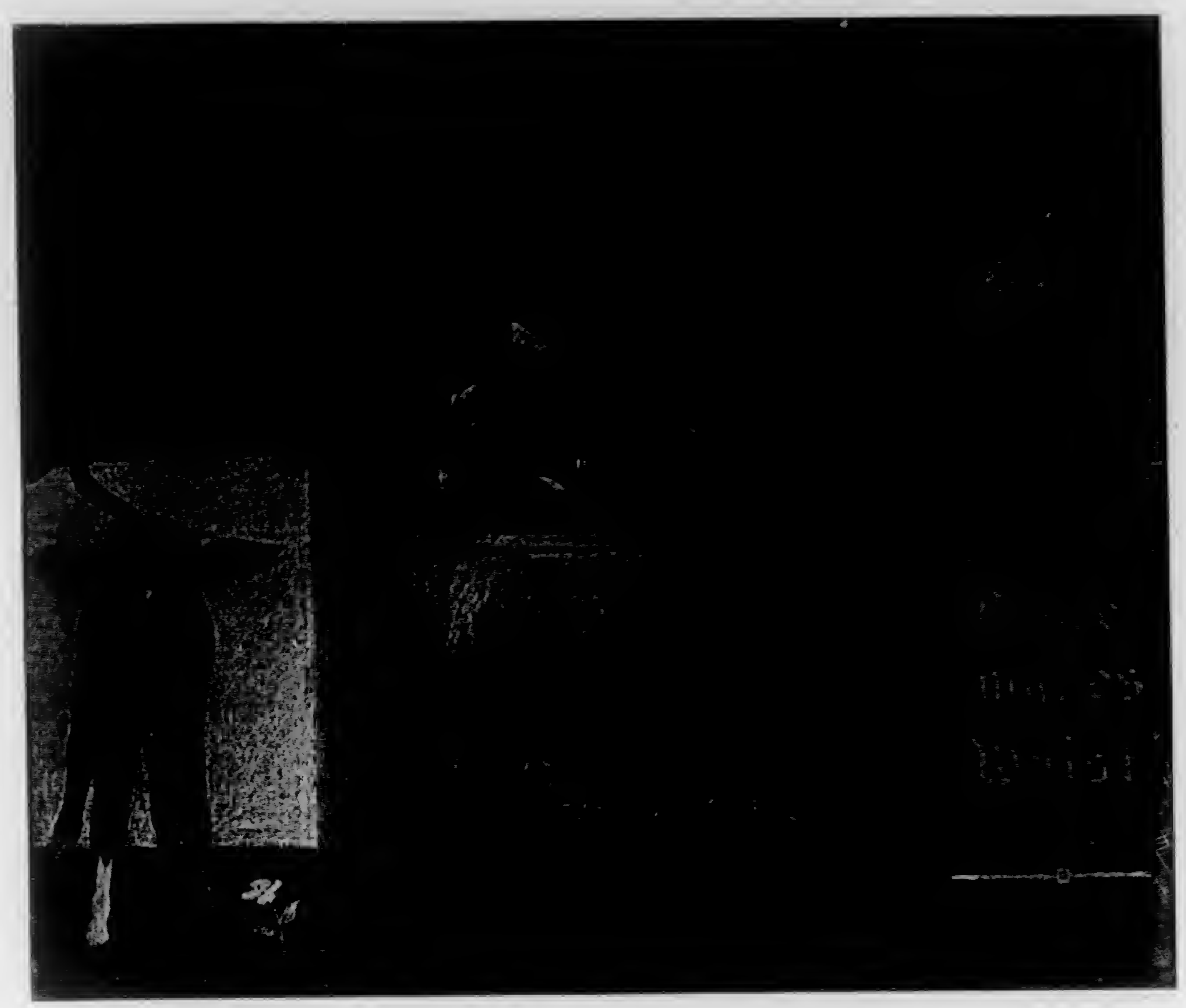
"Awful," said the artists, while Coppa's face fell. Only the arrival of the ravioli restored the *status quo*.

So Coppa was told to provide kindergarten chalk, which he did in abundance, though not without anxious inquiries as to what they proposed to do to his beautiful red paper.

"Never you mind," they said. "It will be all right. You'll like it when it's done."

Queerly enough, Coppa is closed on Sunday. It is an oddly un-Bohemian custom, and results in much loss of patronage, but Coppa likes one day a week in the country.

The first Sunday three men worked. They were Porter Garnett, of the Argonaut staff, who writes and draws with equal facility; Perry Newberry, a newspaper artist, and "Bobby" Aitken, the best-known sculptor of the West, a number of whose statues ornament San Francisco streets



Unique Mural Decorations at Coppa's

and squares, to say nothing of the Spreckels marble music-stand in Golden Gate Park, though his best-known work is probably "Art Lured by Bohemia," which ornaments the Jinks Room of the Bohemian Club.

Coppa had spread a cold luncheon for the willing workers, and, with a touching trust not confined to wall-paper, had left the sideboard open. For the three men it was a lark, like the famous publication of that name which was intended merely as a hoax on the public, to last for one issue, and whose year of life made such a stir in the literary world. The three decided to have fun with the Philistines and to let their fancies run away with them. The most inconsequential fooleries began to cover the wall. Nothing had anything to do with anything else, and if you attempt any sort of orderly progression you end in despair.

The first cartoon placed on the wall showed a large continent surrounded by water, and on it a huge red lobster offers a claw to a long-haired man in a corduroy jacket, while a winged head, which looks like Shakespeare, hovers above. The picture was Porter Garnett's, and the idea is that the lobster and the poet meet on common ground in Bohemia. Mr. Aitken decorated the arch which faces the entrance in fine bold strokes, and the spandrels show two nude figures, one of which bears aloft a smoking fowl and the other a fish. A green frog, very much flattened, forms the keystone of the arch. Literal-minded people gravely survey these figures and say they are out of drawing, which is part of the joke. Underneath the figures is the refrain of a Bohemian song known only to the elect.

More Mural Decorations in the Coppa Temple of Fame

That same first day Mr. Newberry contributed two figures, arms about waists, wandering up Telegraph Hill in the moonlight. As Coppa's is in the very shadow of the Hill this bit of realism may be considered as reminiscent of transient after-dinner affections.

After the first tremendous burst of energy, the frescoes languished, the artistic enthusiasm leaked away, and Coppa thought he was destined to go through life with only part of his beautiful red wall-paper spoiled by pastels which wouldn't wash off. The spring and summer, when all grasshoppers wish to dance, came on, the beautiful California country beckoned to the artists and poets, and it was some time before they worked again. One day the enthusiastic fit came back. Zavier Martinez, a picturesque-looking, impressionist-painting Mexican artist, returned from his native country where he had been sketching, and, being an old patron of Coppa's, he fell in enthusiastically with the idea. One of the best panels at the left of the entrance had been reserved for Martinez, and his first work showed two figures, typical of the Latin Quarter of Paris, where Martinez spent five years, during which time he was the favorite of Whistler and Carriere and, among other things, did illustrations for Gil Blas. These typical figures, a man and a woman, are at either side of a big mirror of the conventional sort, but there is nothing conventional about the next panel, which is also the work of Martinez. It is called "Before the Gringo Came," after Gertrude Atherton's novel, and shows a table at Coppa's in the good old days before conventionality came to sample Coppa's dishes and to ogle the Bohemians.

A number of men appear in the picture, all portraits. There are three women, but these are said to be "just anybody," though some might wager something and not lose. The men are Martinez, Newberry, Garnett, Sterling, who wears a laurel crown for his "Testimony of the Suns," Gelett Burgess, Lafler, editor of the Argonaut, and Maynard Dixon, painter of Arizona scenes and frontier life. One man clasps a girl about the waist, not noticing that her free hand presses that of another man. A girl with a crown of Titian hair smokes a cigarette with Maynard Dixon. It all suggests Mimi and Musetta.

All this freedom and easiness have disappeared. The place is proper enough now if it ever were anything else. "We used to sing and talk, you know," the Bohemians say regretfully. It is their own fault; their pictures made Coppa's one of the sights of the town and put the place in the class with Madame Begue's in New Orleans, and the Parisian cafe decorated by students of the Latin Quarter under the direction of Florence Lundborg. You are likely to be turned away from Coppa's unless you have bespoken a table, and Coppa beams as he counts the shekels his pictures and his shabby friends have brought him.

The gulf between those who go to Coppa's because it is "the thing" and those who have always gone there form the theme of another cartoon by Garnett, in which a lady with a lorgnon says to her evening-coated escort, "Freaks?" He replies, "Yes, artists," to which the long-haired ones at a neighboring table are saying, "Rastaquoueres? Oui, cretins." Rastaquoueres, in the Latin Quarter, it may be explained, meant originally a Philistine who hailed from southern countries.

In July, Gelett Burgess arrived from the Eastern States and the decorations at Coppa's received a new impetus. Burgess added several Goop panels in his characteristic style. He also contributed the "Josephine est morte," after a Latin Quarter song. Josephine is, of course, a Goop. Burgess also suggests a number of quotations.

These quotations, which dot the walls but have nothing to do with the pictures, range from heaven to hell and back again. They are intentionally cryptic and "designed to keep the Philistine guessing." As a matter of fact they range from Rabelais to Alice in Wonderland, taking in Kant by the way, and the best-read in the world would be puzzled by some of them. There is, for instance, the "Something terrible is going to happen," from Oscar Wilde's "Salome," and Whistler's famous retort when classed with Velasquez, "Why drag in Velasquez?" "It is a crime" is from Martinez's unpublished conversations, and the literary miner may dig up for himself, "O love, dead, and your adjectives still in you" and "You cannot argue with the choice of the soul."

The blue-eyed vampire, sated at her feet,
Smiles bloodily against the leprous moon—

is from an unpublished poem by George Sterling, and is not likely to be in demand as a motto for the ordinary *salle a manger*.

Besides these, there are numberless bits from Villon, naturally popular with these unconventional diners, from Verlaine and other vagabond poets, many of them in the picturesque French of other times. One of the ideas was to have as many languages represented as possible—also to the bewilderment of the stranger—and beside Hebrew there appears in the Greek character above the clock, "Business tomorrow." The clock, by the way, is supported on the soles of the feet of Father Time, who, lying on his back, spins an hour-glass on one hand, a Chianti bottle on the other.

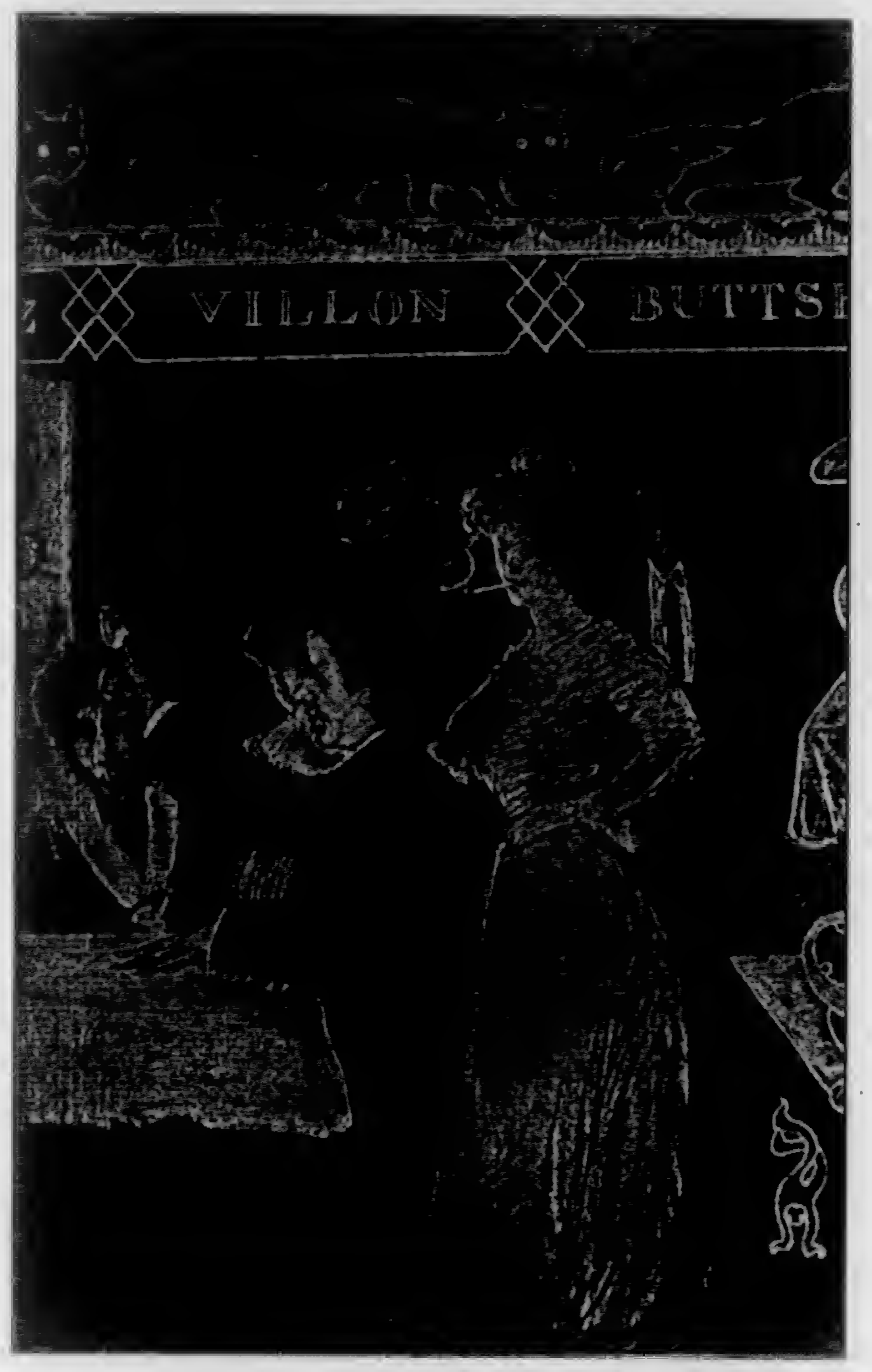
The Goop who represents the muse of nonsense, placed there by the author of the Purple Cow, beams across the room at a baby in a high chair. The baby has the tangled black mane of Martinez and his flaunting red tie. His milk bottle contains Martinez's favorite tipple, absinthe, and the infant is bawling lustily, "I want my Tagliarini."

Above all this miscellany of quotation and illustration is a frieze of prowling black cats, all headed in one direction. 'Tis queer how these figures seem to be moving, as though they walked on a roof, looking in through attic windows at Pierrot and Columbine. As a matter of fact, the cats were designed by Martinez, a stencil was made, and the cats were appliqued on the wall. In spite of the strong similarity each cat seems to have an individuality, and several have eyeballs painted in. These cats are all to have golden paper eyes some day. Below the cats are a string of names—the Coppa Temple of Fame. The delightful thing about these names is the juxtaposition of the past great with the shifting present. The names follow in their order: Aristotle, Newberry, Velasquez, Isabel I, Dante, Martinez, Villon, Buttsky, Rabelais, Garnett, Goethe, Maisie, Nietzesche, Burgess, Whistler, Lafler, Sappho, Sterling, Verlaine, Aitken.

Could anything be more grotesque than the juxtaposition of Maisie and Goethe? Of course it is to be expected that the eternal feminine would press close to the famous lover, but "Maisie" is such an inconsequential name—such a legacy from a sentimental mother. "Maisie" is the "Christian" name of a young woman who does magazine work in San Francisco, and who is a great favorite with the little group which has made Coppa's famous. "Buttsky" is the nickname of the wife of one of the decorators, and Isabel I was a well-known San Francisco newspaper woman now in New York, who was known during her Western sojourn as the queen of Bohemia. She still lives as Isabel the First. In the Temple of Fame Neitzsche was misspelled, but in the claws of the cat above, taken out by force, no doubt, may be seen the missing "Z." The cat above Dante's name casts most languishing eyes at the Italian poet below, and has been christened "Beatrice."

I said that one must secure a table in advance if one would not be turned away from Coppa's, but there is one table at which there is always room. It is a rectangular table, almost in the middle of the room, and at it the original patrons of the place dine. There may be ten persons standing up and but two Bohemians at this table, but the other seats remain sacredly empty. At this table are often to be seen the men who decorated the wall, including Spencer Wright, who does bookbinding, and who contributed "Eeny, meeny, minee, moe"; Anna Strunsky, who collaborated with Jack London in the Kempton-Wace Letters—an enthusiastic little Russian nihilist—London, himself, Lafler of the Argonaut, and a few newspaper men who have been admitted to the inner circle. They and they alone may add to the company at the "Round Table."

Straying in by chance you might think that you had discovered the original of Du Maurier's Little Billee or the prototypes for Rudolpho and his friends from La Boheme, so strange are the clothes, so unfamiliar



Section of Panel, "Before the Gringo Came," by Zavier Martinez

the talk. If you glance at the ceiling you will see black footprints there—footprints which approach the Bohemian table at an orderly pace. Apparently the owner of the feet sees something interesting, for his steps suddenly lengthen, and, in a trice, his feet are cuddled beside a much smaller pair of soles and you see the marks of chair-legs drawn close together. The prints of the chair-legs ornament the ceiling at a point which is just above the Bohemian table.

If you be too polite to stare, you may listen to the conversation at this interesting table.

Sometimes the talk does not scintillate, because the worry of daily bread sits on the Bohemian brow; but suddenly the cloud lifts, glasses clink, and some one proposes a toast and all goes merrily again.

* * *

The Mother-in-law Again

Smith—I never could understand all these mother-in-law jokes. I've always considered Mrs. Smith's mother a heaven-sent blessing.

Jones—You don't mean it!

Smith—Surely. She died when my wife was a baby.—New York Times.

One of the New Friezes

The Decorative Periods*

By C. WALTER TOZER

ARTICLE II.

Egyptian—Babylonian—Assyrian—Persian.

Egyptian—Old Empire, 4000-3000 B. C. Middle Empire, 3000-2100 B. C. New Empire, 2100-324 B. C. Graeco-Roman Revival, 324 B. C. to 300 A. D.

Egypt—332 B. C., became a Greek kingdom; 30 B. C. became a Roman province until the Mohammedan invasion, 640 A. D.

Assyrian—Colonized probably from Babylonia, 1900 B. C. Height of Assyrian influence in art, 1300 B. C.-625 B. C. The inhabitants of Media, Persia and Babylonia were subjects of Assyria. In 640 B. C. the Medes revolted and established the Median Empire.

The Assyrian Kingdom ended 608 B. C., when the Empire of Babylon was established and the Persians also became independent.

In 558 B. C. the Medes were conquered by the Persians and the Persian Empire was established.

Old Babylonian—4000 B. C.

Persian—In 538 the Babylonian Empire was incorporated by the Persians—thus, the Persians inherited the arts of Assyria, Media and Babylonia.

BY A careful analysis of the above brief history, the similarity between the Egyptian, Assyrian, Babylonian and Persian characteristics of design will be apparent.

Egypt and Assyria owed much to Babylon, whose artistic influences were widespread, and strongly exercised in decoration 1800 B. C. to 538 B. C.

Assyrian art was practically a branch of Babylonian art and its influences were not only supreme throughout Western Asia, but bore directly upon Greek art, and also survived in Persia. A chaos of decorative expression was created through interminable wars and the interchange of commerce between the early nations, followed by the Greek influences, the Roman influences and the Mohammedan influences. Time has failed to obliterate certain characterizing details.

The fleur-de-lis of French heraldry sprung from the Egyptian lotus, like many other motifs. The lotus in decoration has been used in three principal forms. The bud form, the full blossom, and the bud and pod.

Of ancient Egypt we know but little, except from what still remains as evidence of its former greatness; the Pyramids, the Labyrinth, and the Catacombs. Egyptian art was at its height 3000 years ago, and its most distinguishing features consist of hieroglyphics, nude human figures, winged globes, the ram, the sparrow, hawk, dung bettle, symbolic animals and foliage, especially that of the palm and the lotus, the latter a symbol of fecundity and life; for the lotus was the first flower to spring up after the waters of the overflowing Nile had subsided and came as a harbinger of promise and prosperity.

The lotus plant is frequently used as a symbol of immortality. The palm has been handed down to the Greeks as a symbol of victory, and the Christian church today regards it as a token of peace.

Frequently we find the so-called Sacred Tree, or the winged male figures, symbolical of the soul; the winged griffins, lions and bulls with human faces. The Assyrian form indulged in geometrical figures, interlacings, zig-zag lines and rosettes, but they all bore more or less the impress of Egyptian art.

Chinese—Japanese

Chinese—3500 B. C. Mythic Period, 3500 B. C.-2200 B. C. First Emperor, 2200 B. C.; Confucius, 500 B. C.

Japanese—1200 B. C. Empire Established, 660 B. C.

From the above table, it will be seen that the Chinese decorative arts date back many centuries. We find in Chinese art many details, that were used in later periods, hundreds of years later. In the floral work of the Chinese, we can note a great deal that is similar to the early Indian work.

As religion has always had a great deal to do with the formation of the Decorative Periods, so the Buddhist religion was responsible for the close affinity between the design workers of India and China. It permitted the introduction of animal details.

It is a difficult matter to exactly define the distinguishing features of the Chinese and Japanese productions. There was an active commercial intercourse kept up between the two countries for many years, and this in conjunction with the result of their mutual teaching and learning, resulted in a uniformity of taste as well as technical practice. This was a very natural condition, as there was so much in common in the flora, religion and customs. Japan, however, was more partial to the geometrical figures, requiring a nicety of construction and a precision of drawing which was not always found in the Chinese work.

Both countries used symbolism in their design work almost entirely. All their lines expressed the earth, the heavens and the ocean, and all forms of art, either plant or animal, were considered as the products of heaven and earth.

Man was the crown of the creation, and it was therefore the representative of life. Heaven was called the position or male principle, while earth or water stood for the negative or feminine principle. The universe was the phenomenon of these principles according to the idea of the ancient Japanese.

The grotesque features which enter into the Chinese decoration are very seriously accepted by the people. The ludicrous attitude of the human figure is necessary to the philosophy of the symbolism. Hence one must be versed in the philosophy of the design to see any beauty in it.

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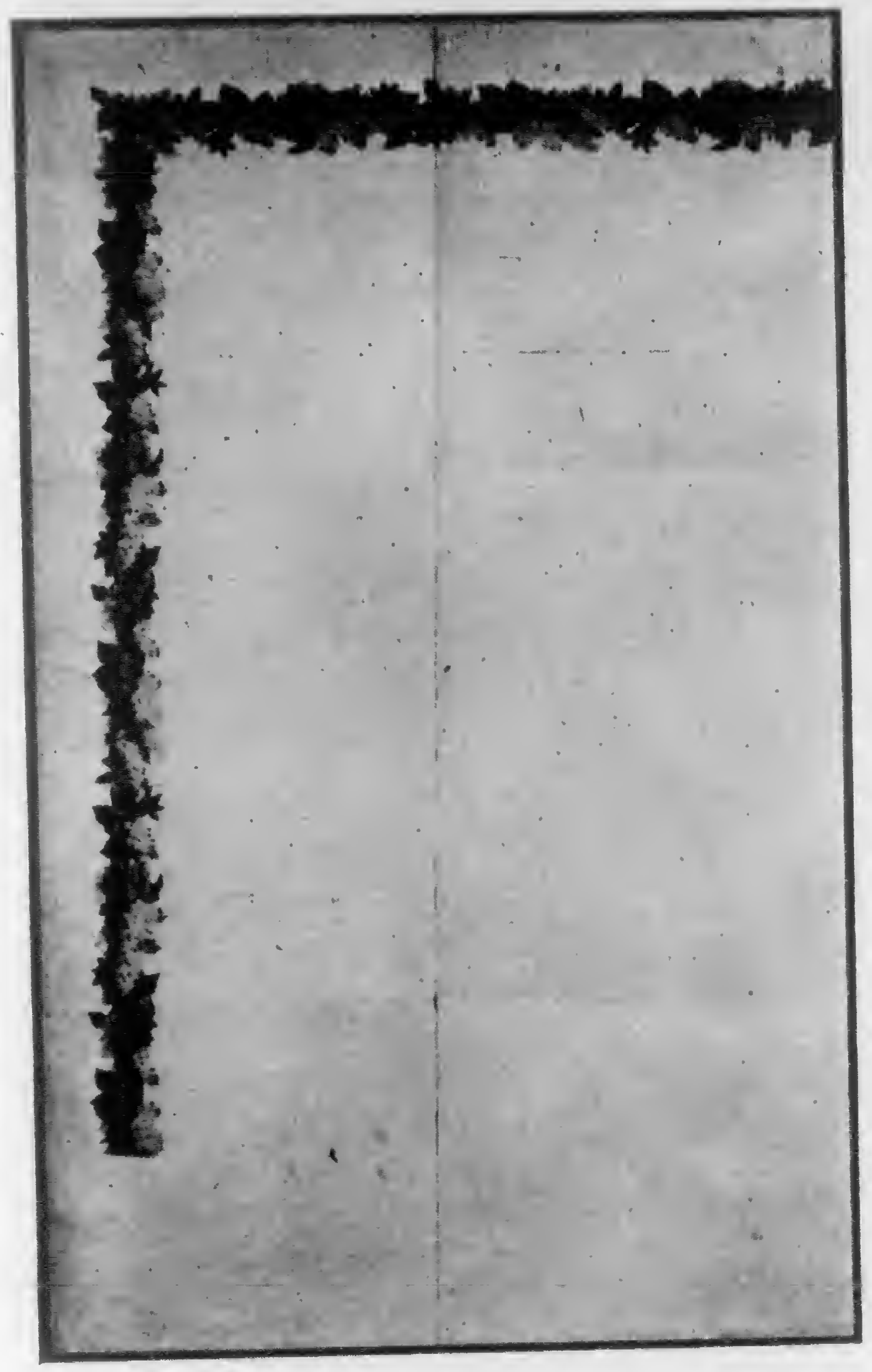
* All tables in this article taken from The Decorative Periods, by Clifford & Lawton.



Panel Treatment for Chamber. Cretonne Matching Lilac Border

The Chinese life is one much given to superstitious practices, and around these practices the decorative work is based. Certain rites are laid down in the code of the Empire. For instance when the Emperor worships heaven he wears a robe of blue, and from this fact, blue is the color depicting celestial matters. During his worship of the earth his robes are yellow, and thus yellow is the color used pertaining to all worldly affairs. His robes for worshipping the sun are red, and for the moon, white.

In their decorative work, the Chinese employ an endless list of deities, demons, monsters and animals of all sorts.

India—Persia—Arabian—Moorish—Turkish

India—2000 B. C. First Period, 2000 B. C.-1525 A. D. (Brahma, 1400 B. C.-500 B. C.; Buddha, 500 B. C.); Mogul Empire, 1525 A. D.-1748 A. D.; English Control, 1748 A. D.; English Empire, 1858 A. D.

Persia—558 B. C.—Persian Empire, 558 B. C.; Extending with some interruptions to 641 A. D.; Conquered by the Saracens (Arabs), became Mohammedan 641 A. D.

Arabian—571 A. D.—Mohammed Born 571 A. D., died 632 A. D.; Saracens Dominion 571-1258; Turkish Dominion 1258.

Moorish—711 A. D.-1610 A. D.—Conquest of Spain 711; Moors expelled from Spain 1610; Alhambric Period 1200-1300.

Turkish—1298 A. D.—Asiatic Empire established 1298 A. D.; European Empire established 1453 A. D.

The above five forms of Oriental design have many characteristics in common, but at the same time it is not a very difficult matter to differentiate between them.

Persian art was founded upon mythology and copied much from the Assyrian and Egyptian. Animal life was commonly depicted until the conquest of Persia by the Saracens, when the Mohammedan creed forbade the use of animal figures.

Turkish design plainly follows the arts of Phoenicia and the Holy Land, Assyria, Babylonia and Chaldea.

Early Indian design was naturally pure as they were united by a common faith, Buddhism. It showed a fantastic temperament, profuse in richness and ever-recurring motifs, principally found among the native plants and flowers. It was also replete with mythological motifs. The Mohammedan tendencies naturally showed themselves in Indian art at a later period. They presented in good decorative spirit the juxtaposition of scroll, floral and mythological suggestion with religious symbolism and the depiction of animal life. Birds in life-like plumage, flowers and animals, verdure conventionalized design were all utilized.

The spirit of mythology also saturated the Persian Empire, prior to its conquest by the Arabians. The fabled animals, serpents and birds, had their deep religious significance and were extensively utilized in designs.

After the conquest of Persia by the Arabians, it was natural to find the Arabian characteristics introduced. Hence we find the mythological features of Persian design disappearing, together with the life form, and the floral, arabesque and strap character succeeding. The Mohammedan influence on Persian art is noticed in the conventionalized florals.

The Mohammedan bible or the Koran, forbade the depiction of life forms. So in the strict Arabian, which was Mohammedan, in which the depiction of animal forms was forbidden, developed a style of design pompous with elaborate Arabesques, scrolls and sweeping lines intervening. The inhabitants of Roman and Greek descent, after the conquests of Northern Africa, adopted the Mohammedan faith, and with the Arabians, amalgamated under the name of Moors. Shortly after this the Moorish government was established by the Moors crossing over to Spain. Hence their arts were of Arabian characteristics, but were developed to extraordinary magnificence and grandeur. More details of strapwork were introduced, being interlaced most ingeniously. The floral and geometrical details, ignored by the Arabians, were ornamented with unusual skill by the Moors. The Moorish treatment gives one the idea of one pattern interlacing another. Colors, much used, were gold, red and blue. They used inscriptions decoratively and hieroglyphics ornamentally. The Alhambra gives us the best examples and the walls there were covered with inscriptions.

The Turks adopted Mohammedanism in the Seventh Century, and their dynasties reigned in Palestine, Syria and Egypt. Seven centuries later all Christendom felt great anxiety over the power of the Turks in Asia Minor and the wonderful expansion of the Mohammedan faith. The crusade movement brought about an alliance between the Greeks at Constantinople and the Turks, but this alliance did not result well and terminated in the surrender of Constantinople to the Turks. Thus was established the Turkish Empire in Europe. The Turks then converted Christian churches in the conquered countries into mosques or charged Christian artists with the erection of new buildings. The Turkish ornamentation became very much confused, because of the Byzantine and Arabian modes.

Strange to say, the Mediaeval art was largely Christian, and after the Mohammedans established their European Empire in Constantinople; Christian symbolism and Mohammedan symbolism were merged.

Apparently meaningless, were the geometric forms so much used in Mohammedan design, but they not infrequently represented conventionalized animal life, as the Koran forbidding any direct representation, the artist used the life form conventionalized.

* * *

Ownership of Architect's Drawings

IN discussing the above subject in a recent issue of one of the Western architectural papers, H. H. Statham writes as follows:

The question is distinct from that of architectural copyright in designs, with which it must not be confounded. It turns on the question whether the drawings and specifications made by the architect in order to carry out a building are to be retained in his custody or to be handed over to his client. In France and Germany no legal question is raised on the subject—the architect retains the drawings as a matter of law. In England, though, custom has been almost universal in the same sense. But in the case of Ebdy v. McGowan (1870), the court ruled that, the building not having been carried out, the drawings must be handed over to the client on his paying for the time expended on them. In the case of Gibbons v. Pease (1904), the court, to the surprise of architects, ruled that the precedent of Ebdy v. McGowan covered all cases, whether the building had been carried out or not, and that the client had a right to demand all the drawings, the court refusing to hear any evidence on the side of the architect, whose drawings and specification can, therefore, in England, be legally claimed by the client, although he already has what he really paid for, viz: the building itself.

It is pointed out that an architect is not paid for making drawings, but for producing a building, the drawings being only his necessary instructions to the workmen; under some circumstances he might even dispense with drawings altogether. To require him to hand over to the client drawings and specifications, which represent the result of his professional experience over many years, for the client to use as he pleases, is a manifest injustice to the architect. Moreover, the custom in the profession of handing over the drawings to the client when the building has been planned, but not carried out, is a mistake on the part of the profession; as in such a case an unscrupulous client has only to say that he has changed his mind in order to get possession of the drawings and use them as he pleases, with no further compensation to the architect. The wording of clause I of the institute scale of charges is most unfortunate, as it appears to state (though not so intended) that the architect's commission is for producing drawings of a building. The wording of this clause should be amended.

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Regular meetings, the second Friday in January, April, July and October.

San Jose Schools

The San Jose school board has selected five well-known California architects to draw plans for as many new school houses to replace those destroyed by the earthquake. The fortunate ones are:

S. F. Allen of Pasadena, to be architect of the High School building.

Wolfe & McKenzie, San Jose, architects of the Grant school; cost $50,000.

Binder & Schumacher, San Jose, Lowell High School; cost $70,000.

G. W. Page, San Jose, Longfellow school; cost $80,000.

Stone & Smith, San Francisco, Horace Mann school; cost $85,000.

All the buildings will be erected with special regard to safety from both fire and earthquake. Metal lath and steel partitions will be used wherever possible. All will be supplied with modern heating and ventilating equipment, lighting and sanitary arrangements.

The High school will represent an outlay of $175,000. The style will be mission. There will be two wings connecting a central edifice with two square towers in the center. There will be an assembly hall with a seating capacity of 1200.

Contractors and material men should get in touch with the above architects without delay. There will be considerable mission tile used on the buildings, also cement, metal lath, etc.

Palace Hotel Plans

It has been decided to build a hostelry to cover the entire site of the old Palace. The former plan did not contemplate the construction of a main building to extend from Market street to Jessie, but an open palm garden, between narrow wings, facing on the latter thoroughfare, was considered.

Arrangements have been made to put up a main building of nine stories, with a two-story extension on Jessie street, which will contain a ballroom, reception, banquet and dressing rooms, similar in arrangement to those of the old Palace, but on a more magnificent scale. Especially notable will be the Louis XV reception room. There will be several dining and reception rooms as successors of the famous Maple Hall and Marble room.

The palm court will be rebuilt in the old location, but will be larger than the former historic lounging place About half of the space will be devoted to a cafe. Another difference in the new court will be in the roof of ornamental glass, which will cover the area at the second story. This will provide an open court above for furnishing light and air to the hotel rooms.

The architects are still busy with the plans, and there may be further minor changes before work is commenced. The hotel and site will represent an investment of $5,500,000.

Pioneers Building

From time to time information has been given to these reports regarding the new home of the California Pioneers Society. It has been definitely decided to make the building six stories, and it is to contain 350 rooms. Righetti & Kuhl are the architects, and the building committee is composed of H. L. Byrne, G. H. Luchsinger and H. P. Gibbs, who have the say in awarding all contracts.

A feature of the building will be a large assembly hall, where the Pioneers will hold their reunions. Probably movable seats will be installed. The building is to be elaborately furnished and decorated. There will be a hotel in connection with the building which will cost $300,000. The Lindgren-Hicks Company are the general contractors.

Olympic Club's New Home

The greatest rush job in the rebuilding of San Francisco is the work started a week ago on the reconstruction of the Olympic Club's home on Post street, near Mason.

Day and night, Sundays and holidays, the dismantling of the ruins is going on. A force of 200 men and thirty debris wagons working in two shifts are engaged in the task of removing the foundations and the huge cement swimming tank in order to make room for the enlarged salt-water bathing resorvoir that is promised for the regular use of the club's members by June 1st.

Where the old swimming tank was sixty feet long the new one is to be 100 feet, which it is claimed, will make it the largest tank in any swimming club in the world. The old tank was practically on a level with the street floor. The new tank is to be at the basement level, which will be thirty-three feet and four inches below the sidewalk line.

The old site of the Olympic Club covered a ground area 137.6 square. The building upon it, constructed of stone and brick, was three stories and a half high. The new site has been enlarged to a frontage of 170. The old depth of 137.6 has been retained. The new building will be six stories high and will have a sub-basement. The entire building will be devoted to the uses of the club members, of whom there are now about 3000. It is the present intention to have the entire building ready for occupancy by March 1st of next year. Henry A. Shulze is the architect.

Willis Webb Polk

The death of Willis Webb Polk, a Kentucky architect, in San Francisco, on November 30, at the age of seventy, is noteworthy, as it recalls the fact that there really was a considerable number of private soldiers engaged in the Civil War over and above the officers who have been glorified in history and immortalized in bronze. Mr. Polk more than once declined a commission, on the ground that it was easier to get good officers than good men of the rank and file. After an unusually strenuous career in the Confederate Army, he began life over again as a builder and architect in Louisville, where he built up a considerable practice, extending it later in life in Jeffersonville, Cincinnati and St. Louis. About a dozen years ago he moved to San Francisco to join his son Willis, who had established himself there some years earlier, thus bringing about that confusion of identities which always afflicts father and son of the same prenomen engaged in the same pursuit.—American Architect.

These Architects Are Busy

One of the busiest architectural firms in San Francisco today is Meyers & Ward in the Kohl building. The following work, representing an outlay of close to $1,000,000, is on hand in this firm's office, and on many of these jobs bids are now being taken:

Building for Keil Estate Co., Mission street, between Third and Fourth streets, $110,000.

Building for Keil Estate Company, Third street, between Market and Mission streets, $60,000.

Building for Ruby Hill Vineyard Company, corner Mission and Annie streets, $45,000.

Building for Ruby Hill Vineyard Company, on the east side of Mason street between Eddy and Market streets, $28,000.

Building for C. F. Kohl, west side of Third street, between Market and Mission streets, $150,000.

Building for Hyman Bros., west side of Third street, between Market and Mission streets, $180,000.

Building for Baruch Bros., corner Third and Stevenson streets, $85,000.

Building for Phillips Estate Company, southeast corner of Second and Mission streets, $75,000.

Three story brick apartment house, Shattuck avenue, Berkeley, $60,000.

Class A office building in Stockton, for the Stockton Savings and Loan Society, $130,000.

$40,000,000 for New Buildings

The total cost of the new buildings begun in this city between May 19, 1906, one month after the great fire, and January 31st, last, is stated by Chief Building Inspector John P. Horgan to be $40,128,753.

Of the total mentioned $25,984,598 represents the cost of buildings for which permits were issued and on which work was begun between May 19, 1906, and November 19th of the same year. The remaining $14,217,296 represents the showing made between the latter date and the end of last month.

Of the total cost of all the buildings $3,050,000 represents Class A structures, $2,194,100 Class B, $14,198,549 Class C, and $16,387,902 frame structures, while the remaining $4,298,202 represents the cost of alterations and repairs.

Plans for New Hotel

Competitive plans have been called for from architects all over the United States, for the new million dollar hotel which the Bankers' Syndicate is to erect in Oakland. The committee has under contemplation the offering of a bonus of $25,000 to the architect whose plans are accepted. Architect Walter J. Matthews of Oakland is to act as supervising architect in the construction of the building.

New Oakland Buildings

A permit has been granted J. P. Edoff to build a three-story brick structure on Broadway just north of Seventeenth street, Oakland, and which will be occupied by the Braley-Grote Furniture Company. The plans have been prepared by Bakewell & Brown of San Francisco, and the cost is to be $50,000. C. M. McGregor has the contract.

A. V. Feight will erect a three-story apartment house on Grand avenue, near Webster street. Plans for the structure, which will contain eighty-eight rooms and cost $30,000, have been prepared by Architect Thomas D. Newsom.

Southern California Chapter, A. I. A.

The Southern California Chapter, American Institute of Architects, after the usual dinner at Levy's, January 8th, endorsed the work being done in large cities of the United States by the National Industrial Peace Association.

The request for endorsement came from P. H. Scullin, general secretary of the organization, who told the architects of the endeavor being made to establish State boards of arbitration for the prevention of antagonism between employers and employees in the form of lock-outs and strikes. The association's work was commended in a letter from Secretary Glenn Brown, of the American Institute, which President Myron Hunt of the Chapter read.

The remainder of the meeting was devoted to consideration of voluminous committee reports submitted by Architects Hudson and Rosenheim. The members present were Messrs. Myron Hunt, Fernand Parmentier, August Wackerbarth, J. Lee Burton, Thomas Preston, R. B. Young, John P. Krempel, Arthur Benton, F. A. Rosenheim, Harrison Albright, Frank Hudson, P. W. Ehlers and W. Reeves.

Red Mens' Home

The plans and designs for the Red Men's Home, by Architect W. H. Weeks of San Francisco and Watsonville, which is to be erected at Vista Del Rey, a suburb of Monterey, have been accepted by the Red Men's Building Association. The structure will be of the mission style of architecture and cost $50,000. Articles of incorporation of the building association have been filed.

Portland Association of Architects

At a recent meeting of the Portland Association of Architects the following officers were elected for the ensuing year: President, Emil Schacht; vice-president, C. C. Robbins; treasurer, Edgar M. Lazarus; secretary, Otto Kleeman; trustee, Carl Leick. The association has been in existance about five years, and has done a great deal in revising building laws in the interest of better construction.

Scottish Rite Cathedral

Several of the prominent San Francisco architects have been invited to compete in preparing plans for a $500,000 Scottish Rite cathedral, details of which will be published as soon as the competition ends. The building will probably be of stone and concrete and will be elaborate in all its details.

W. L. B. Jenney, Architect

As we go to press the press dispatches state that William le Baron Jenney, formerly of Chicago, the originator of steel construction in building, is dying at his home, 6616 Thorne avenue, South Pasadena. He is known throughout the architectural world as one of the foremost men of his profession, and will leave many magnificent monuments as the result of his application and accomplishments.

Jenney, who was born in 1832 at Buzzards Bav. Mass., located in Chicago as an architect in 1867, and was burned out in the great fire of '71. Before the ashes of his office cooled, he went to work on the first plans for rebuilding the city, and put up the first brick building after the conflagration. It still stands.

Jenney's first building, in which steel was applied, was the Home Insurance Company's office, Adams and Lasalle streets, reared in 1885. More followed fast, principal among them being the New York Life, Fort Dearborn, National Life, Central Association, Isabella, Fair, and many others. Horticultural Hall, at the World's Columbian Exposition, also was Jenney's design.

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CONCRETE FAILURES; MUST WE HAVE THEM?

From this time on there are likely to be some records broken in rush jobs in reconstruction work in San Francisco. A few buildings have already been put up in remarkably short time. Just how thorough has been the workmanship remains to be seen. We know there has been some very bad reinforced concrete construction, but this cannot be laid to rush work so much as to incompetent workmanship and lack of proper engineering supervision.

Architects make a mistake in not hiring a competent engineer or superintendent to plan and supervise their concrete work. Especially is the architect deserving of censure if he is not well informed upon this type of construction. And there are quite a few who are not. If a concrete building fails—and there surely will be some that will the way a few are going up—the first inquiry that will be made will be for the architect. If he has designed and superintended the construction personally it will be "up to him" to explain the causes for the failure and if he hedges there will be experts who will get at the facts and the public will be advised. This to the injury, perhaps the undoing, of the architect.

On the other hand, if the architect has employed competent engineering advice and has left the supervision of the work in skilled hands, his conscience need not trouble him. He need have no fear of failure or professional criticism.

The Architect and Engineer has for over two years championed the cause of good reinforced concrete construction on the Pacific Coast. It repeats what it has said many times before that a properly built reinforced concrete structure cannot be beaten, at least from fire protective and economic standpoints. But a poorly built structure is a menace to the community in more particulars than one, and unless drastic measures are taken to prevent failures, concrete construction will receive a set back from which it will be no easy matter to recover.

Good engineers and reliable contractors know this, and it behooves them to protect their own interests. We suggest that a committee be appointed to inspect all reinforced concrete buildings under construction in San Francisco, and wherever weaknesses are found the building should be reported to the municipal authorities with a recommendation that the structure be condemned. It is safe to say that if one or two owners or contractors were forced to stand the cost of tearing down a building and rebuilding it they would be more careful in the future.

We do not like rush jobs, although it must be admitted that some of the grandest and most successful achievements in building construction have been accomplished in a hurry. Day and night shifts are generally employed on rush jobs and it sometimes happens that in the haste to get through seemingly little things are overlooked. Its the little things that count, even in putting up a building, so gentlemen, be careful when you undertake a rush job not to overlook the little things, for we want only honest, well constructed buildings in the new San Francisco, be they of concrete, brick or frame.

* * *

SIGNING BUILDINGS

Among the subjects which came before the members of the American Institute of Architects at Washington, D. C., in January was that of architects signing their names to buildings. The committee appointed to report on the question was heard from but its findings failed to elicit the enthusiasm that some of the other reports evoked. The report, it must be admitted, was lacking in positive conclusions. The committee lamented the fact that it was able to find only a small amount of material with which to base its arguments in favor of the architect signing his work. The fact of the execution of an architect's design by others than himself is, we believe, one reason why the architect has not taken seriously to the signing idea. On this point the committee says:

"Even the best of painters will probably sign in some manner a rough pen-and-ink sketch. Let us not therefore hasten to do the same. The pen-and-ink sketch is completely the author's work no matter how unimportant, while the architect's stable may be so largely infused with the practical reasonings of a somewhat unimaginative coachman, that it becomes difficult to determine how much of the result belongs to his genius and how much to that of the designer. Clearly at one end of the scale the architect will have no desire to immortalize himself. If, on the other hand, the work is important and of a public character, the practice would probably be recommended without argument."

It seems to us that the question is one which the architect himself should solve. If he wants his signature to appear on some effort of which he is especially proud, all well and good. There can be nothing unprofessional in his doing so provided, of course, the signature is made in an unostentatious manner similar to that adopted by painters and sculptors.

The committee concludes that if the custom is to be taken up it should come gradually and not by proclamation. If any piece of work is good and very good, both in design and execution, the architect deserves to have his name placed upon it. It would be impractical to have the exercise of this right passed upon by proper and competent committees, so, as we said before, he must decide for himself.

CHIMNEYS MADE OF CONCRETE

Under the caption "Another Concrete Failure," an Eastern brick journal devotes much space to describing and illustrating the collapse of a reinforced concrete chimney at Peoria, Illinois. The cause given for the so-called failure is overweight. No official report, however, has been made, and until such is given we shall not attempt to form any conclusions.

We think it opportune at this time, however, to call for a discussion on the durability of concrete for smoke stacks. The point has been raised that the sulphur and corrosive acids in coal smoke will slowly decompose the portions of concrete exposed to their action and cause the inside of the chimney to crumble in the form of dust, and that this process will continue until the chimney will be in danger of collapse from its own weight.

Doubtless some of our readers have had occasion to watch the changes that take place inside of a cement chimney and the results must necessarily be valuable to concrete advocates. Therefore we invite contributions on the subject and quote from a recent issue of Concrete the following interrogations:

"First.—Is cement concrete, composed of Portland cement. sand and gravel, or of cement, stone-dust and crushed stone, either or both, suitable and durable material for building chimneys, and something that will not be injured by coal smoke or other usual products of combustion?

"Second.—If cement concrete, made as above, is not proof against smoke, what aggregates can be used to make it so?"

* * *

Position Wanted

Reinforced concrete superintendent, having constructed high reinforced concrete buildings. Also experienced in design of members, desires a position. Address or call at office of the Architect Engineer, 621 Monadnock building, San Francisco.

A Short Talk on Advertising

(Domestic Engineering.)

To advertise or not to advertise seems to be the great question of the day and on this subject, as all others, there are "many men of many minds." To anyone who makes a careful study of the matter, however, there can be but one answer and that is—ADVERTISE—, with a big A. In proof of this one has only to look through the various trade papers as well as the numberless magazines of all kinds published each month and note the advertisements that are being put forth by the leading houses of all lines until the names of some of them are household words.

It is also a well-known fact that all progressive manufacturers now read the advertising pages of their trade papers with as much care as its reading columns, because they are constantly on the watch for the latest improvements in their particular line, and it is the man who presents the merits of his article in the most convincing manner who will get the business.

Another thing—one advertisment cannot be expected to produce great results. There must be a continued effort steadily maintained. Advertising must be looked upon as an investment, not an expense, and if one will follow the writer's plan of charging advertising with all expenses of any kind connected with it and giving it credit for all new business obtained, one can soon see the result and it will be practical proof of what advertising does.

The whole matter resolves itself, therefore, into the following: Good advertising matter plus good trade papers equals largely increased business.

She—That Mr. Planz, the architect, has a funny way of pronouncing things, hasn't he?

He—I haven't noticed it.

She—Why, yes. Didn't you hear him allude to a sore throat?

He—A sore throat!

She—Yes. I heard him mention a gargoyle several times. We always call it gargle, you know.—Cleveland Plain Dealer.

Wants Back Numbers

T. T. Davis, architect, 341 E. Second South street, Provo, Utah, will pay twenty-five cents for each back copy of the Architect and Engineer dated January, February, September and October, 1906. A complete file from January to October, if left at this office, will be paid for at the same rate.

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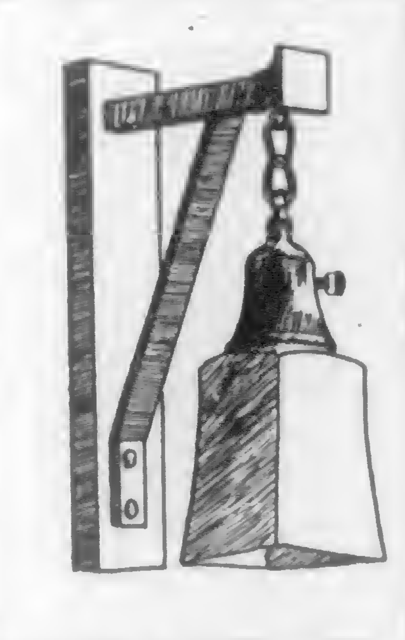
The Publisher's Corner

Scofield Company Changes Name

The Scofield Engineering & Construction Company, of San Francisco, has changed its name to the Scofield-DePalo Company. L.M. Scofield is the president and M. DePalo the chief engineer. The company has moved its general offices from the Kohl building to the new Flannery building at the corner of Market and Geary streets. Among the notable contracts taken recently by this company is one for the erection of a four story and basement fireproof hotel for Mrs. Charlotte Clark on Turk street near Larkin. The building, which was designed by Architects Meyer & O'Brien, will be of reinforced concrete and 137½ feet square. The company also has under construction a five story and basement office building of reinforced concrete for the Anglo-Californian bank at Sixteenth and Mission streets. The plans for this building were drawn by Sylvan Schnaittacher.

Fulton Construction Company

The Fulton Construction Company with offices in the Stover building, corner of Eighth and Market streets. San Francisco, has been incorporated with Delmar Smith, president, H. R. Fulton, general manager and Duncan Davis, secretary and treasurer. The



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Company will make a specialty of boiler settings and general brickwork. Among the important contracts already taken by the Company along this line are the following: Ovens and boiler settings, Standard Biscuit Company; boiler settings, American Biscuit Company, Boyce Lumber Company, Globe Milling Company, Finley Wood Company, John Hoy Company, Harmon Lumber Company, Warner Bros, Lorden Milling Company, Speck Machinery Company, American River Power Company of Stockton, and Taylor and Company, Alameda.

Increased Sale of Peninsula Onyx.

This beautiful decorative stone has been coming to the front very rapidly, as Mr. Lew C. Black, the agent for the company in this territory, states that his company has secured a number of contracts, the largest of which is the interior finish and fixtures of the First National Bank of Long Beach.

The company is putting in 162 feet of counters, the check desks, ladies' waiting rooms and the President's reception rooms and office. This will be, when completed, one of the most elegant banking rooms on the coast.

A contract has been secured for the entrance of the new Elks' Hall, now being erected in San Diego.

In San Francisco the company has put in, through the Brunswick-Balke Collender Company, a small but very fine job in onyx for the Ferry Cafe.

In its factory in San Diego the company is turning out a line of fine pedestals, the first of which have been shipped to George Borgfeldt & Co., the immense importing firm of New York. Satisfactory connections made with other first dealers in high grade lighting fixtures will eventually result in a large business in this line. Shades made from Onyx are not only unique and beautiful but are equal in every way to light diffusing globes such as the well known Holophane and other globes of this class.

One company has shipped twenty-five carloads of Onyx in the rough squared blocks to eastern manufacturers and has orders for six more carloads which will be shipped on arrival of the next cargo from the quarries.

Altogether the New Pedrara Mexican Onyx Company is very well pleased with its first year's business and the prospects for the future are bright indeed.

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American Construction Company Clearing Debris from Basement of Hearst Building, San Francisco

The American Construction Company Wrecking Chronicle Building

Manager Reis of the American Construction Company reports enough contracts on hand to keep his men busy the rest of the year. The company has begun to wreck the old Chronicle building which is quite a delicate job owing to the heavy traffic on that corner. When the walls have been taken down the structure will be rebuilt to harmonize with the new building now being completed. Other work undertaken by this company is the removal of the debris from the basement of the old Examiner building at Third and Market streets; setting the steel for the California Wine Association's big building; also the History building, removing the steel from the ruins of the old Odd Fellows building at Market and Seventh streets, and numerous other smaller jobs. The company besides making a specialty of steel wrecking and construction work does considerable pile-driving and wharf and bridge building. The main office is at 896 Eddy street.

Carnegie Plant Enlarged

M. A. Murphy, manager of the Carnegie Brick and Pottery Company, says that his plant has considerably increased its output during the past year. The many improvements and extensions in the various departments have placed the company in a good position to do a large part of the work in its line that will be required in connection with the great rush of building work consequent to the rehabilitation of San Francisco during the next few years. The entire State of California, and for that matter, all the other Coast States, are also doing a great deal of building. The products turned out at the company's plants near Tesla are face brick, enamel brick, fire brick and sewer pipe. The demand for all these has been extremely heavy ever since the San Francisco fire. While a great deal of fine architectural terra cotta will be required, the erection of so many reinforced concrete buildings will make the total required much less than would have been the case if all the large building were to be of brick. Many of these reinforced concrete buildings have a

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cement exterior finish and do not require a great deal of terra cotta on the inside, as compared with the amount used in the buildings formerly erected here.

While the use of second-hand brick from the ruins of the city has somewhat reduced the demand for common brick, as compared with what it otherwise would have been, Mr. Murphy finds that the pressed brick manufacturers have had and will have plenty to do. There are four large factories in and around San Francisco, which produce large quantities of face brick and terra cotta. In Mr. Murphy's opinion, these plants can take care of the new year's demands in fair shape, although, if nothing occurs to interfere with building construction, the year 1907 will far eclipse all previous records in the demand for building materials. This company has now erected a large frame warehouse at its new San Francisco yards, on Tenth street, between Mission and Howard, where a large stock of its products is carried. The general offices are still located in the Montgomery block, on Montgomery street.

Los Angeles Pressed Brick Company.

The Los Angeles Pressed Brick Company, which is now arranging to increase the size of its plant at Point Richmond, California, by 50 per cent., has contracted for 1000 additional horse-power of electric energy.

The Pacific Blower and Heating Company is rushed with orders.

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In New Quarters

The Hewitt Machinery Company (Inc.) has moved from the Monadnock building to more commodious quarters in a new building just finished at 37 Second street. A stock for immediate deilvery will be kept on hand and this will enable the company to fill all orders promptly. Several large machinery contracts have lately been taken in addition to a number of hurry orders for Atlas engines and boilers. Besides the Atlas goods the company is handling the Blaisdell air compressors, Kilbourne & Jacobi's ore cars, Chalmers & Williams' mill and mining machinery, the Shaw "Eclipse" air hammer rock drills and the Jeffrey "Badger" rock drills.

Alfred G. Webber has taken the management of the Roberts' boiler and Hamilton grate and has opened an office at 179 Twelfth street, Oakland.

The Western Building Material Company will supply the cement for the new Flood building, at the corner of Fourth and Market streets. This building will be the largest of its kind in the world. It will be of reinforced concrete. Charles F. Whittlesey is the architect.

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Are Shipping Many Brick

Since the first of the year the California Brick and Clay Manufacturing Company has completed more than one-half of its new building at Antioch and the waste heat dryer system is now in shape so that all orders can be filled promptly in spite of the wet weather. The company reports many orders on the books for sewer pipe, chimney pipe and hollow fire proofing of all kinds. Some large shipments of material have recently been made to San Francisco and interior points.

The company has its plans all worked out for the new kilns it is going to erect as soon as the weather clears. It is proposed to build at once two large circular down draft kilns, and one brick kiln which, in addition to the present capacity, will make the company rank among the large producers of the coast.

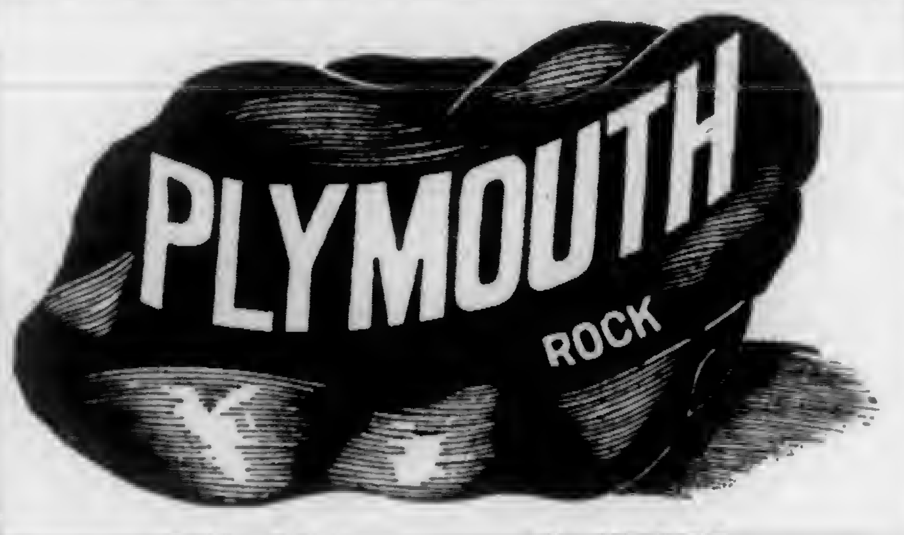
The Redwood Manufacturers Company at Oakland is one of the most successful enterprises across the bay; thanks to the tireless efforts of Manager W. A. Boscow. Business with this company has more than doubled the past year. There is a great demand for redwood, pine and cedar doors, a large stock of which the company always keeps on hand.

Cement Work Causes Comment

D. Ross Clark, the well known cement plasterer, did the ornamental plastering and cementing on the new Flannery building, and Mr. Clark is being complimented for doing such a creditable piece of work. He is also doing the plastering and cement front on the three story building planned by Architect Frank Van Trees for the Enterprise Real Estate Company on Market street. The ceiling and wall panels in Kilbourn & Hayden's Ferry Cafe were decorated by Mr. Clark and from an artistic standpoint it is as fine as anything to be found in that section of the city. Mr. Clark is a member of the San Francisco Builders' Association, where he may be reached any day during the noon hour.

Four Stories

The Mutual Cold Storage Company, recently organized, is planning to erect a four-story brick building on East street, near Sansome, which will be one of the largest and best equipped cold storage plants in the West. Construction will begin as soon as architects' plans can be drawn up and approved by the directors of the company.



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Wood lath, two-coat work—One part Empire hard wall plaster fibred, two parts clean sharp sand (fresh-water sand preferable), mixed thoroughly and applied within two hours after mixing.

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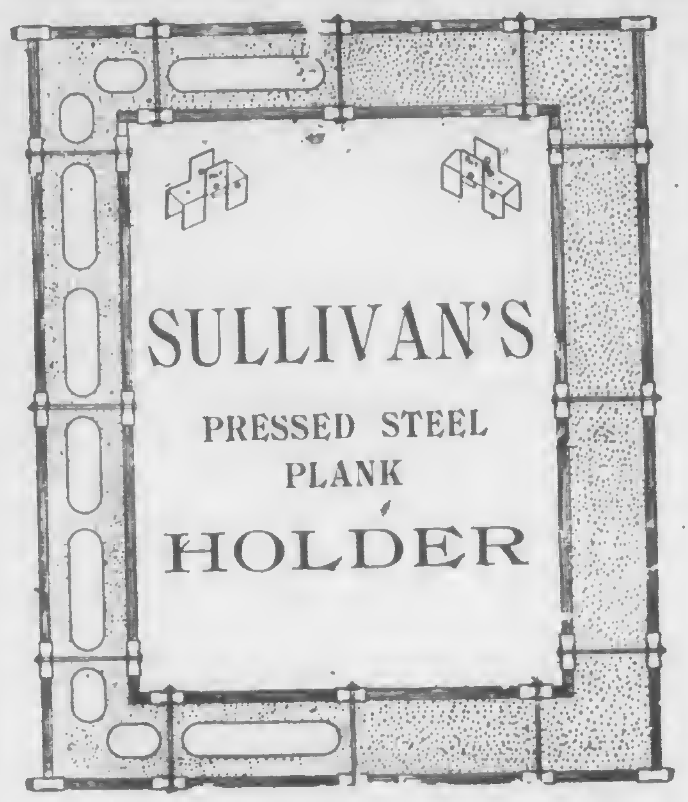

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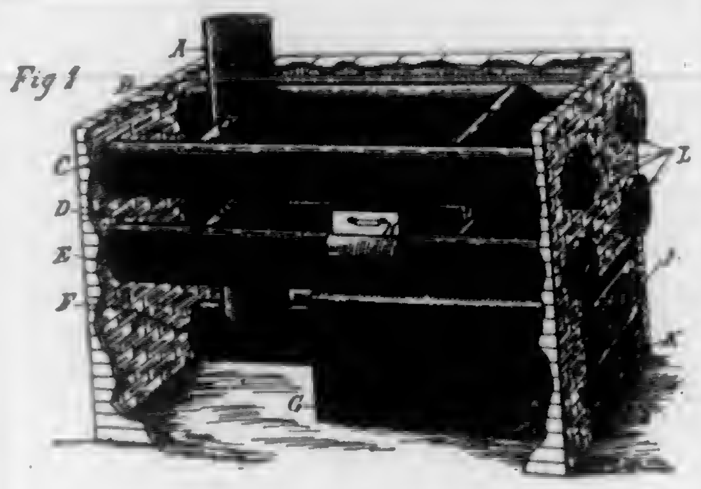

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"American System for Reinforcing for Concrete Construction" is the title of a neat, well gotten up little booklet now being distributed by the Pacific Concrete Machinery Company of San Francisco and Los Angeles. The book includes about fifty pages of illustrated matter showing and describing the various buildings on the coast and elsewhere built according to the American system. C. F. Wieland, the well-known San Francisco engineer, is the resident consulting engineer of the system which should be sufficient guarantee of its worth. Among the illustrations shown are several progress photographs of the A. Schilling plant.

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The Steel Situation in San Francisco

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"We notice by the newspapers that certain parties are delaying placing orders for structural steel until such time as they can do so with any degree of certainty of delivery.

"To the best of our knowledge some of the very largest producers of structural steel are considerably behind hand in their deliveries, but this does not apply to all of the mills and structural shops. We might say in this connection that we are the representatives here of Levering & Garrigues Company of New York, and they are prepared to make prompt deliveries of structural steel fabricated ready for erection. In further substantiation of our statement we can inform you that we recently took a contract for a small steel frame, for a building to be erected on Market street, and made shipment complete in forty days after receipt of drawings, and we really feel that such a record is one to be proud of when everyone knows the present general conditions of the steel market.

"We know that considerable work has been delayed on reinforced concrete buildings, the builders claiming that there is great difficulty in obtaining bars for reinforcement promptly. We have supplied round, square and twisted bars for a number of buildings, among them the new building for the American Biscuit Company, which we believe is about the largest reinforced concrete building that has so far been planned here. On this contract we have supplied approximately 850 tons of bars, and were able to make very prompt shipments.

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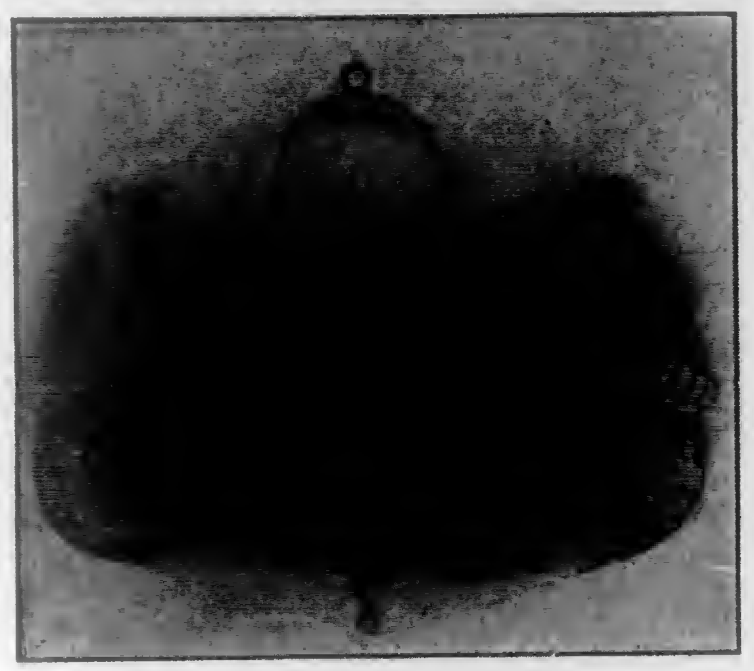

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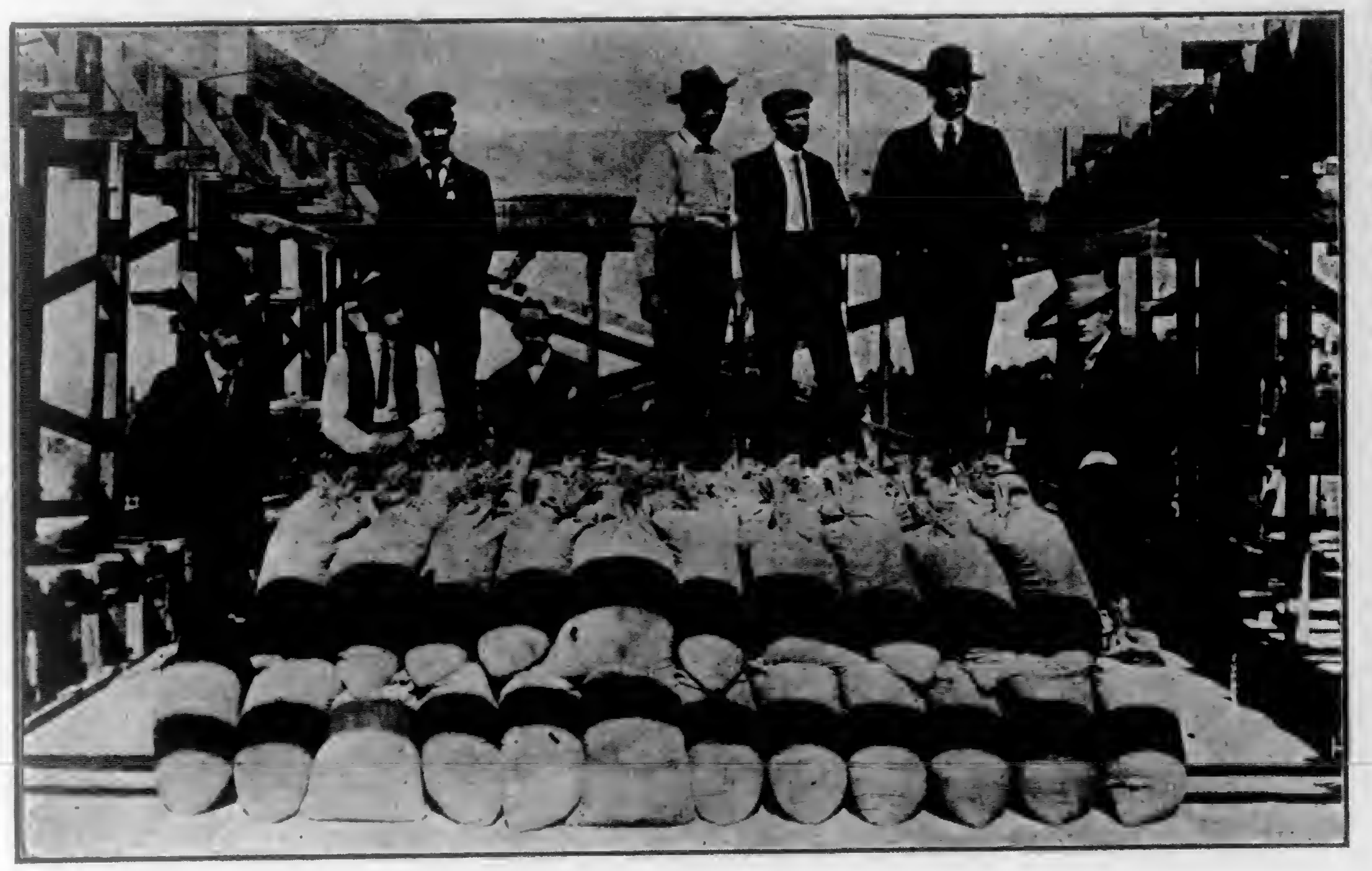
TESTS made upon the floor construction of the Bixby Hotel show remarkable strength and excellent design. In these floors and beams only the KAHN SYSTEM was used. This building is now being added to and the great success of the use of the KAHN TRUSSED BAR, as shown by these tests, especially as compared with the twisted bar or plain bar reinforcement, have led the architects to specify the Kahn System exclusively in these additions. The architect, J. C. Austin, has expressed himself as being so well PLEASED with the Kahn System of reinforced concrete, that in the future he will use it in preference to any other system.



TONS of sacks filled with sand were placed on the floors of the Bixby Hotel, causing a super-imposed load of 240 pounds per square foot. This load is six times the load for which these floors were designed, and is equivalent to the weight of three tiers of heavy men packed together as closely as possible, and one tier on top of another.

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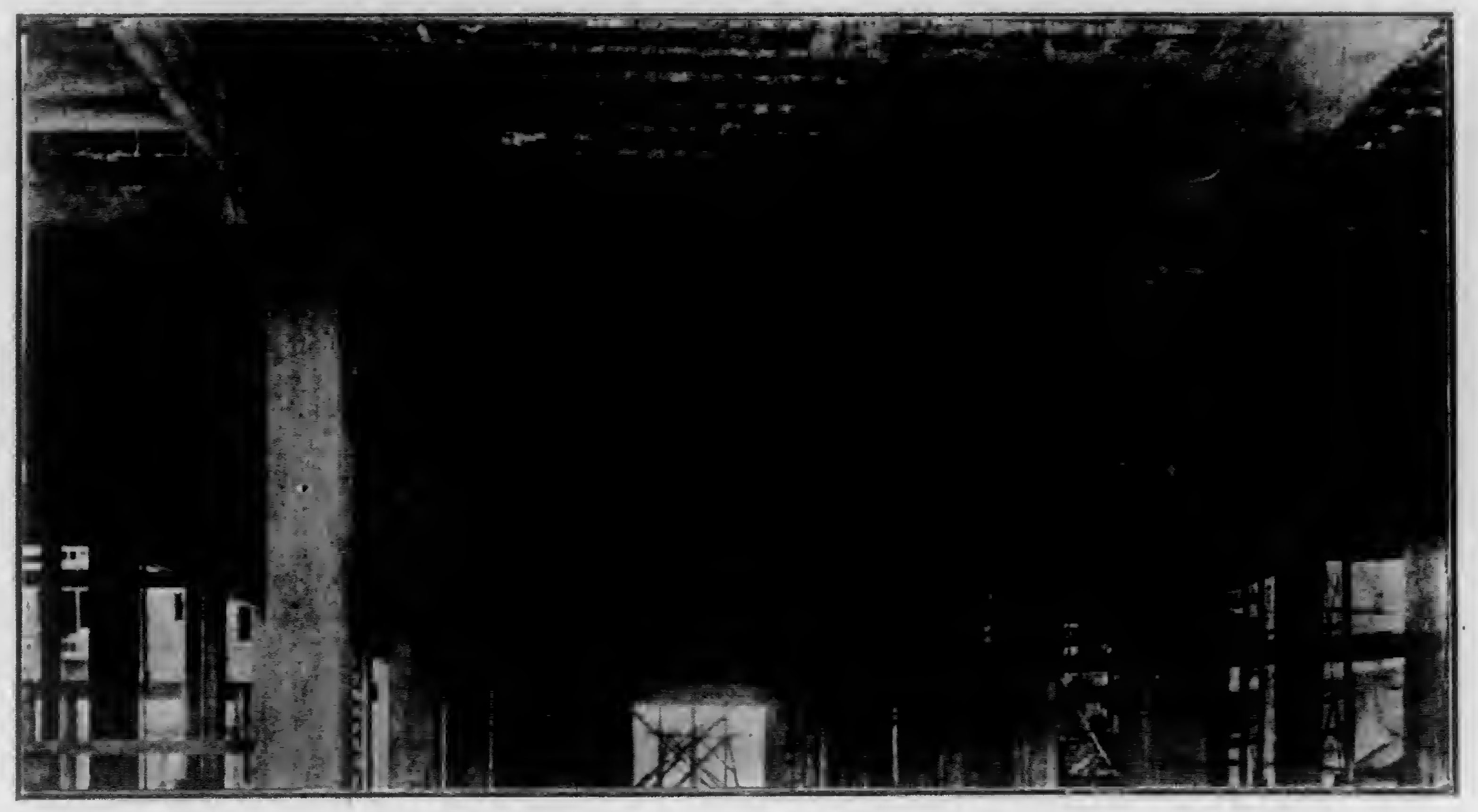

CEILING construction under the load shown on preceding page. The clear span of these ceilings is 17 feet 8 inches. Note that the concrete joists spanning between the girders carry all the load, thus making it a true reinforced concrete construction. The rows of hollow tile are merely used to fill the spaces between the joists, which would ordinarily be vacant and unattractive in appearance. As far as strength is concerned, all of these tiles may be removed without any injury to the construction.

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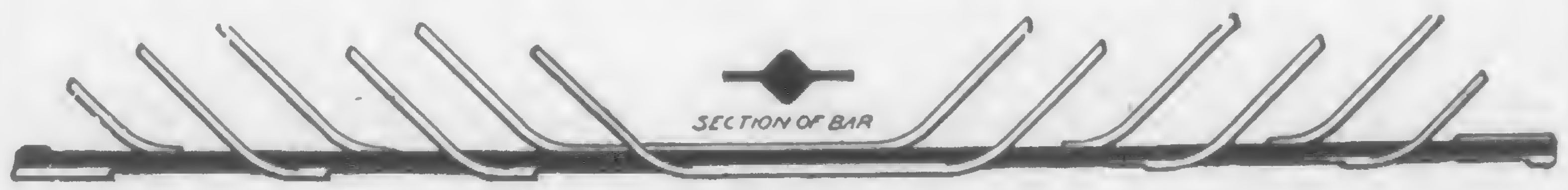

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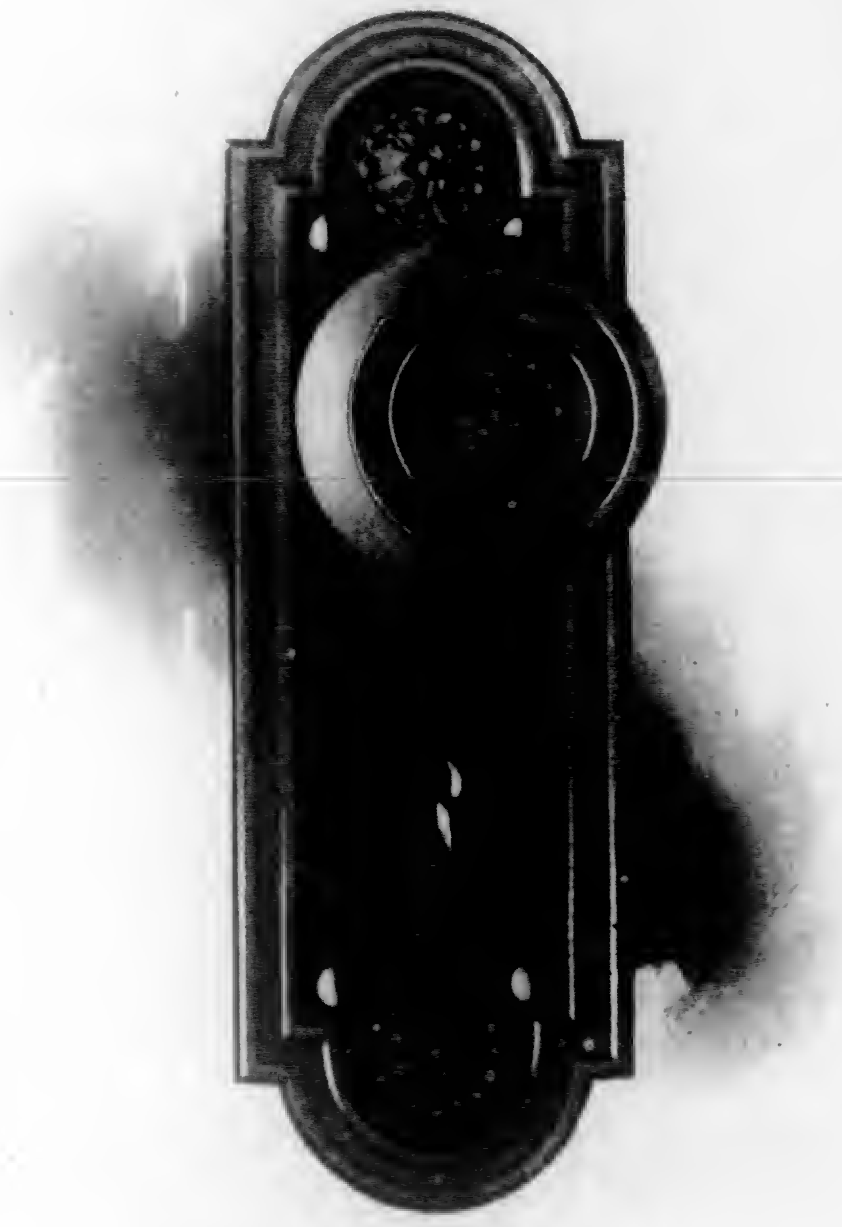

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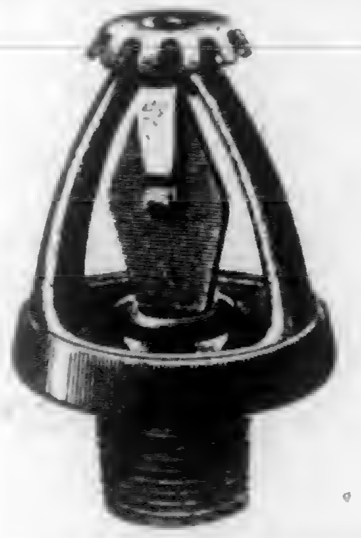

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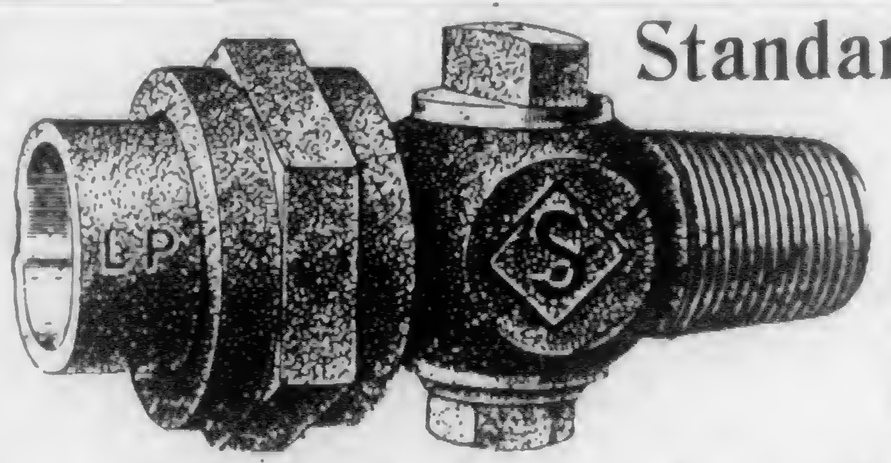

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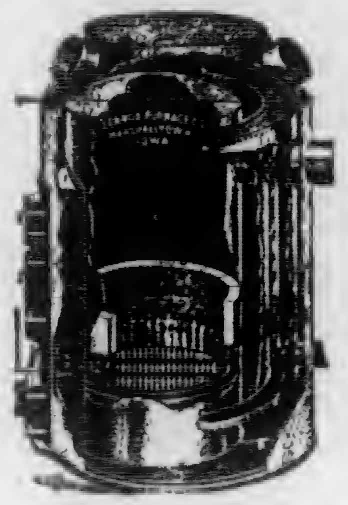

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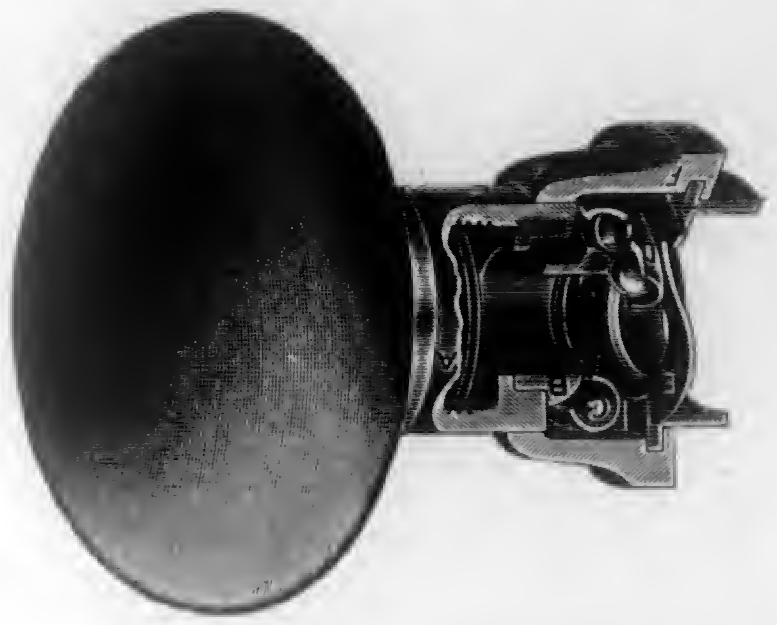

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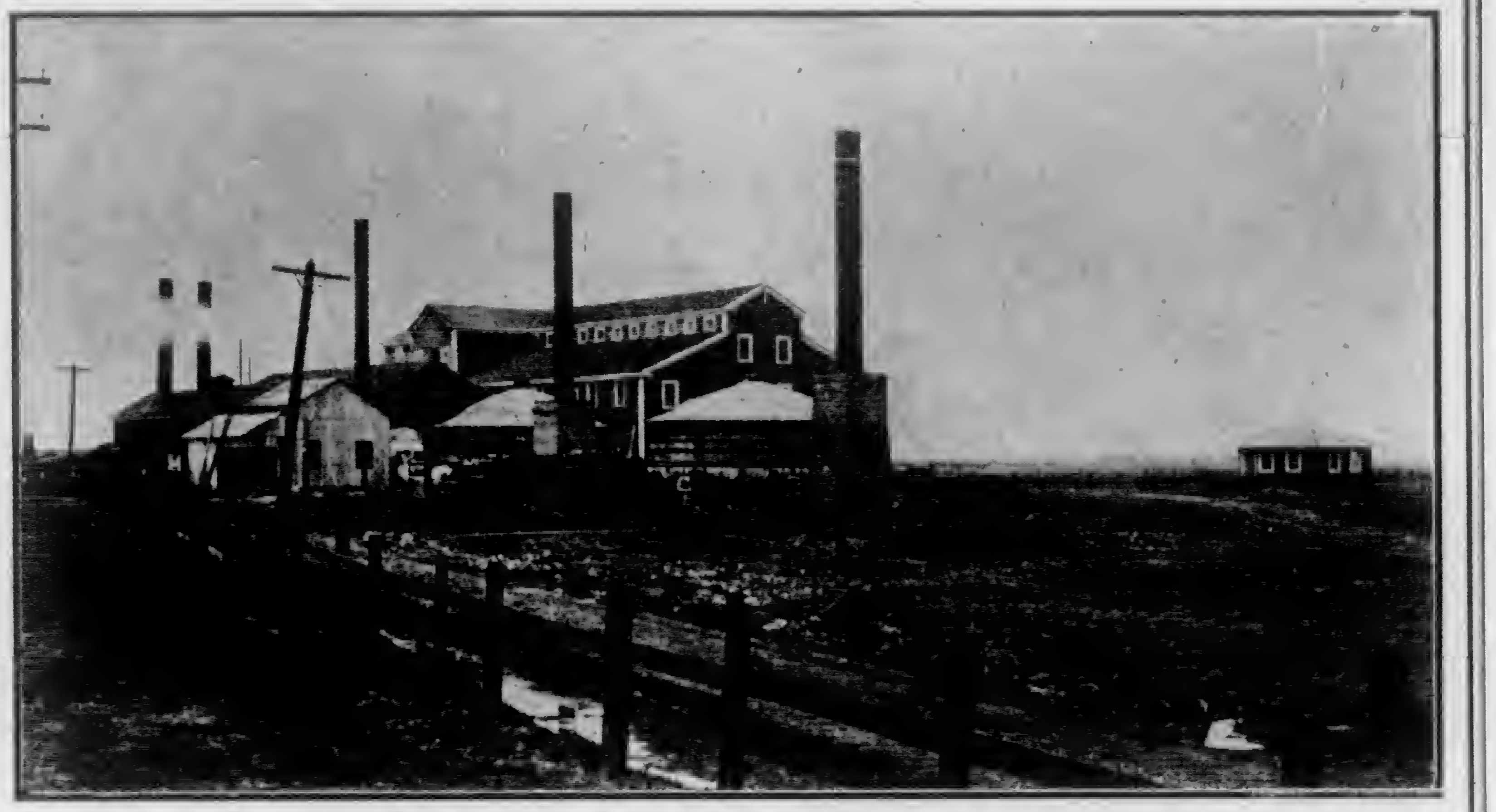

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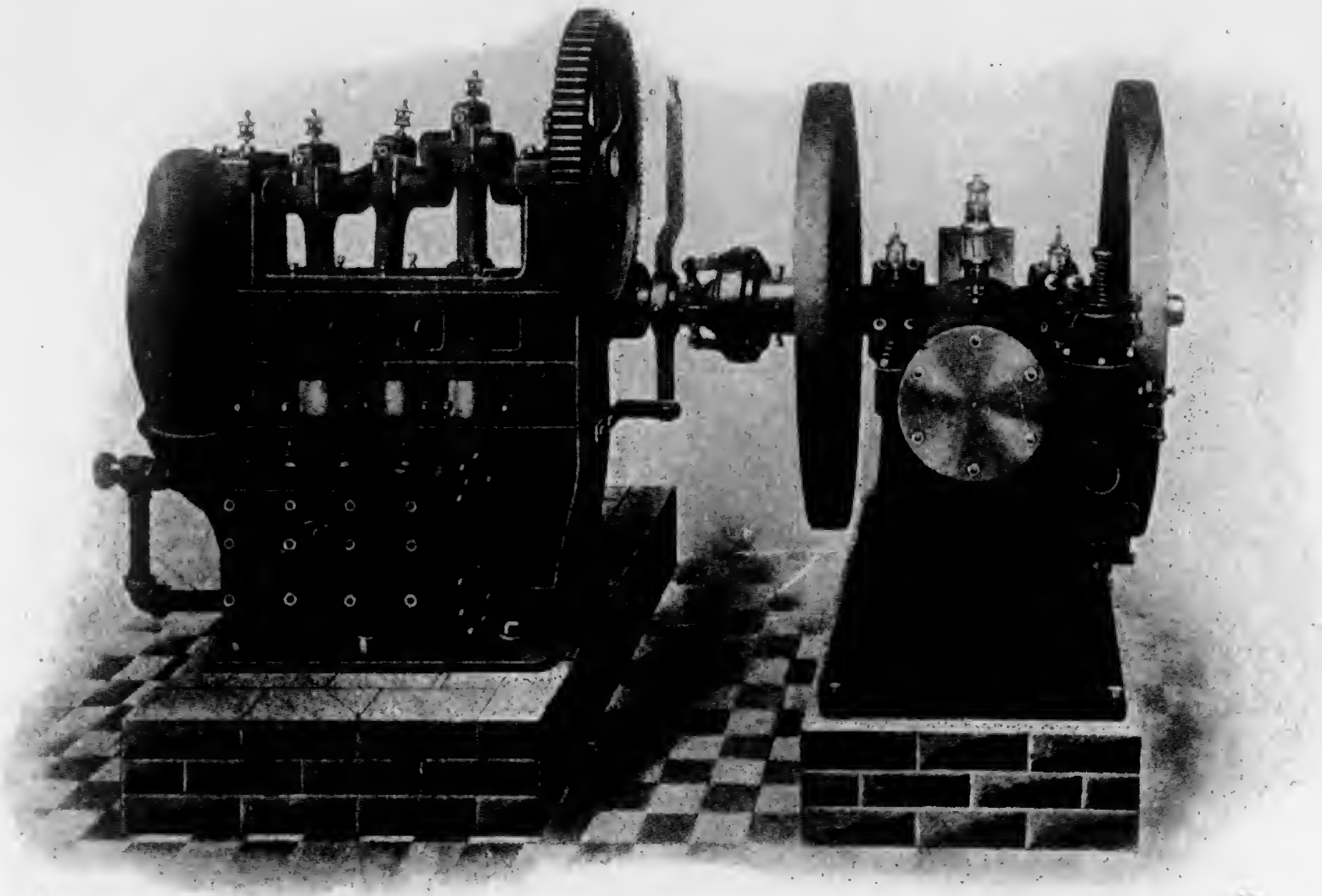

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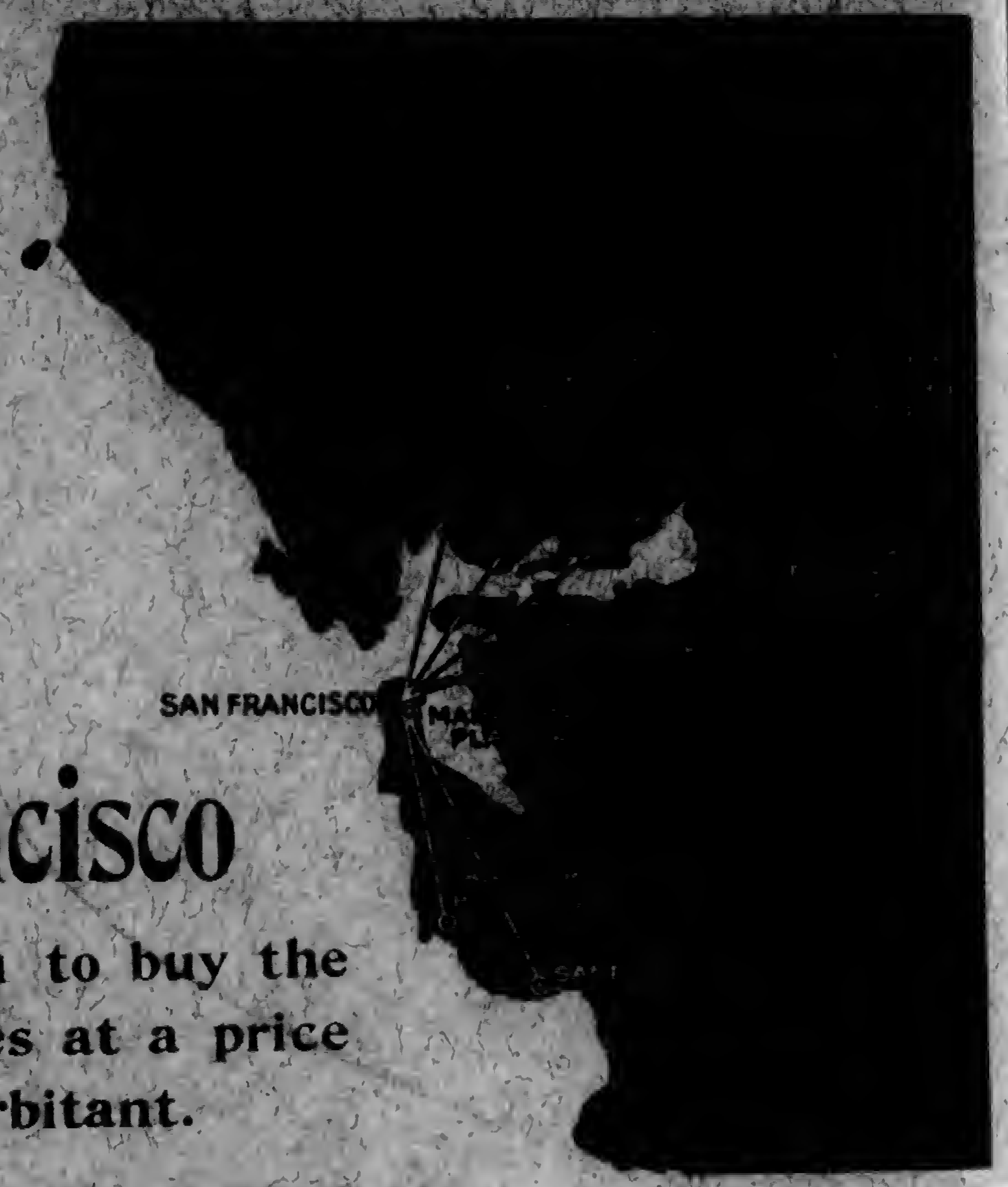

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A. F. Rosenheim

Frontispiece, The Architect and Engineer of California

THE
Architect and Engineer
Of California

VOL. VIII. MARCH, 1907. No. 2.

The Work of Alfred F. Rosenheim, Architect

CONSPICUOUS among men of exceptional and enduring achievement in the profession of architecture in Los Angeles, is Alfred Faist Rosenheim, who planned the superb Herman W. Hellman building, at Fourth and Spring streets, and is now supervising the construction of the mammoth Hamburger Department Store, which will occupy more than a half block in what promises to become, in a short time, the business center of the Southern California metropolis.

During his four years residence in Los Angeles, Mr. Rosenheim has made himself known as a master of the architectural business, one not only skilled in the innumerable practical requirements of his special line of industry, but notably gifted with a fine sense of harmony in proportions, a leaning toward accurate and exquisite detail, and, above all, structural stability.

Mr. Rosenheim is a vigorous champion of the steel frame in the erection of large and important buildings. He has invariably recommended the selection of this material when the choice has been at issue among his clients, and, in more instances than space allows for enumeration, his judgment has prevailed.

"I make no protest against the use of reinforced concrete", Mr. Rosenheim remarked a few days ago. "Concrete has its uses and its place, but, in my opinion, it cannot at present be classed with protected steel, and indeed probably never will be. The elements of chance and danger preclude this possibility. The temptation and the tendency, on the part of contractors, to slight this kind of work, will always exist. This being true, as long as contractors are dependent on unskilled labor and inadequate supervision for the performance of honest work, the results are certain to be disastrous."

"Numerous failures in concrete construction, in many parts of the United States during the past few years, supply sufficient evidence of the facts I have mentioned. More particularly has this come to public notice within the preceding twelve months."

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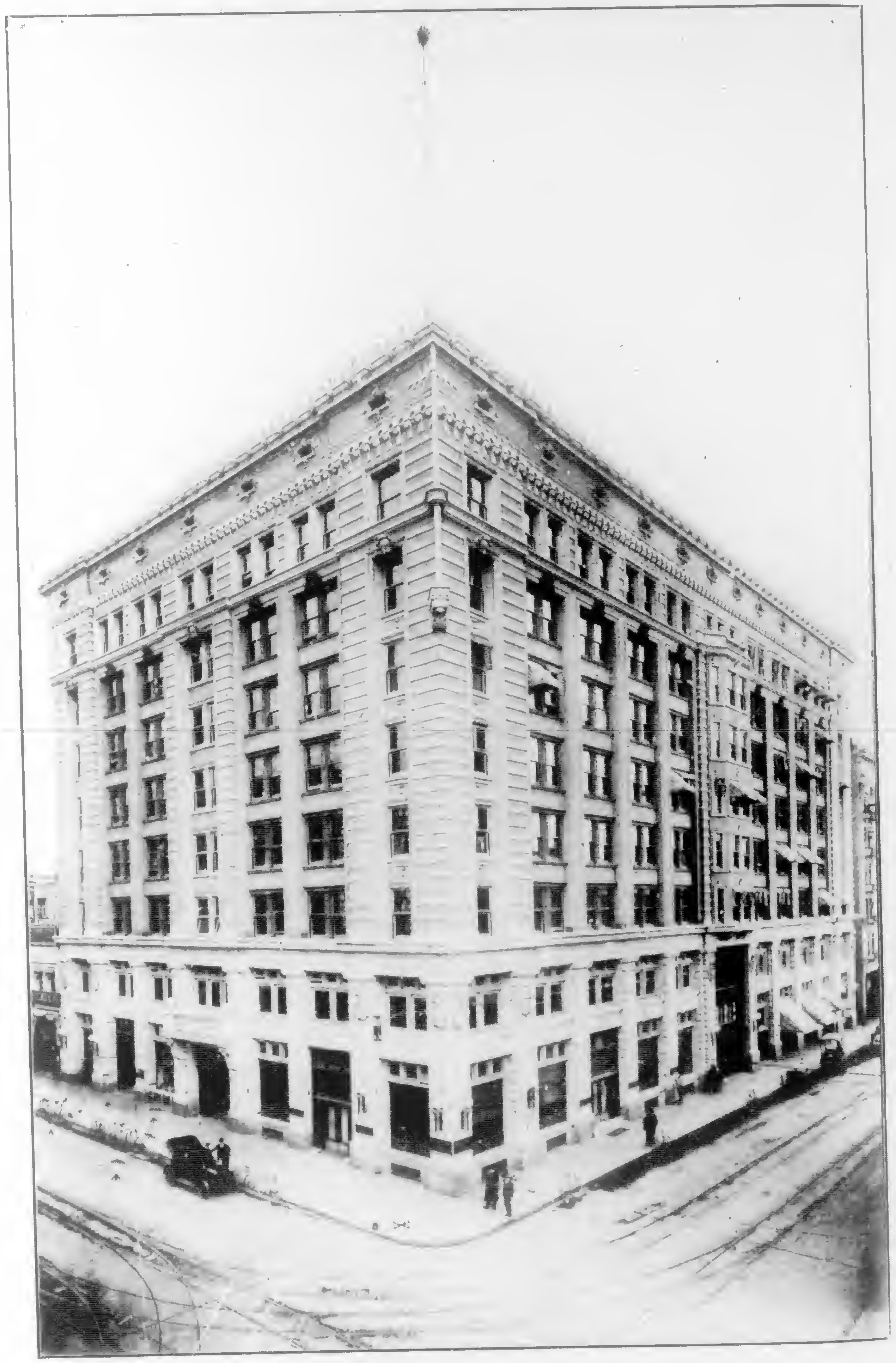

The Herman W. Hellman Building, Los Angeles
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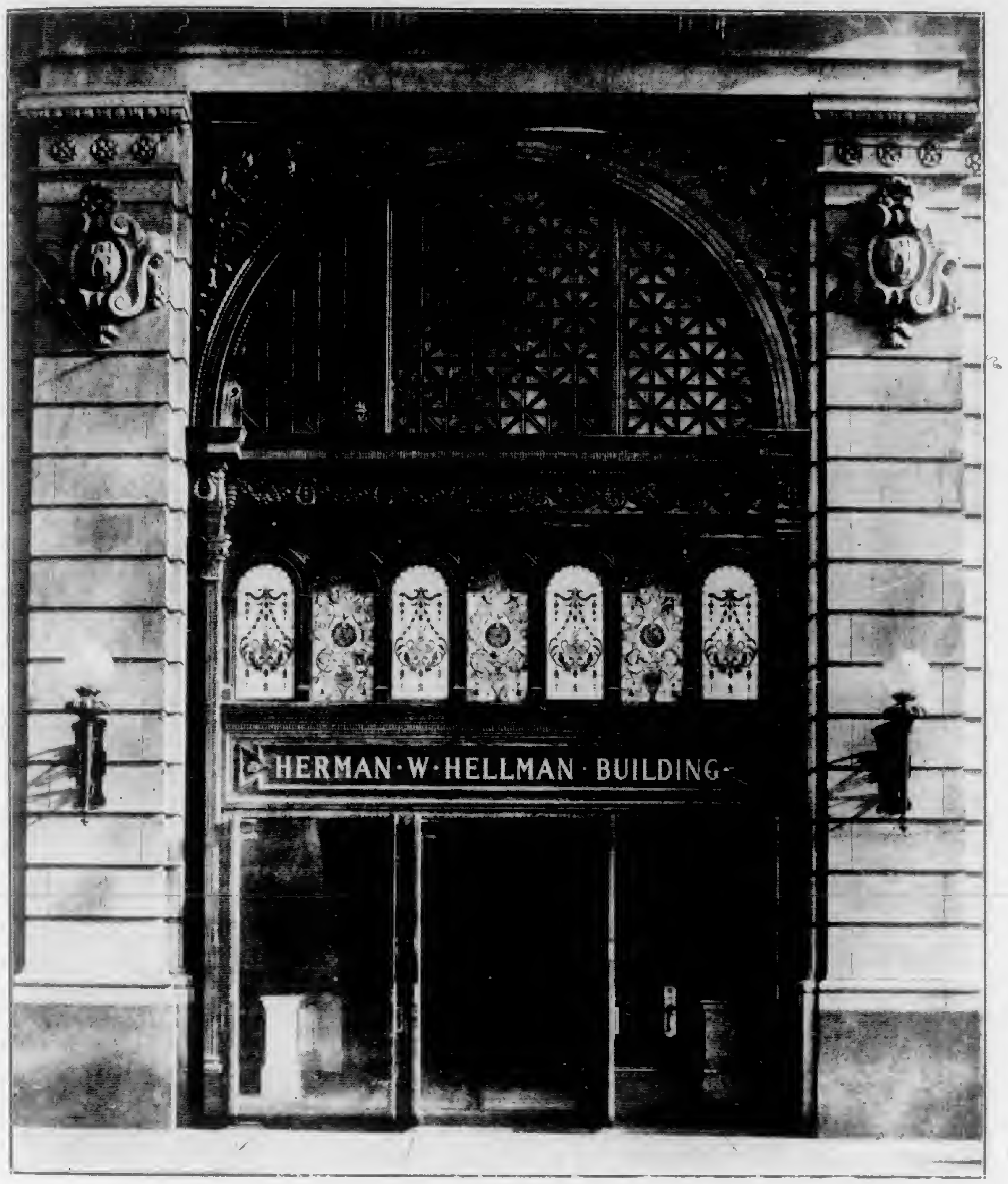

Fourth Street Entrance Herman W. Hellman Building, Los Angeles

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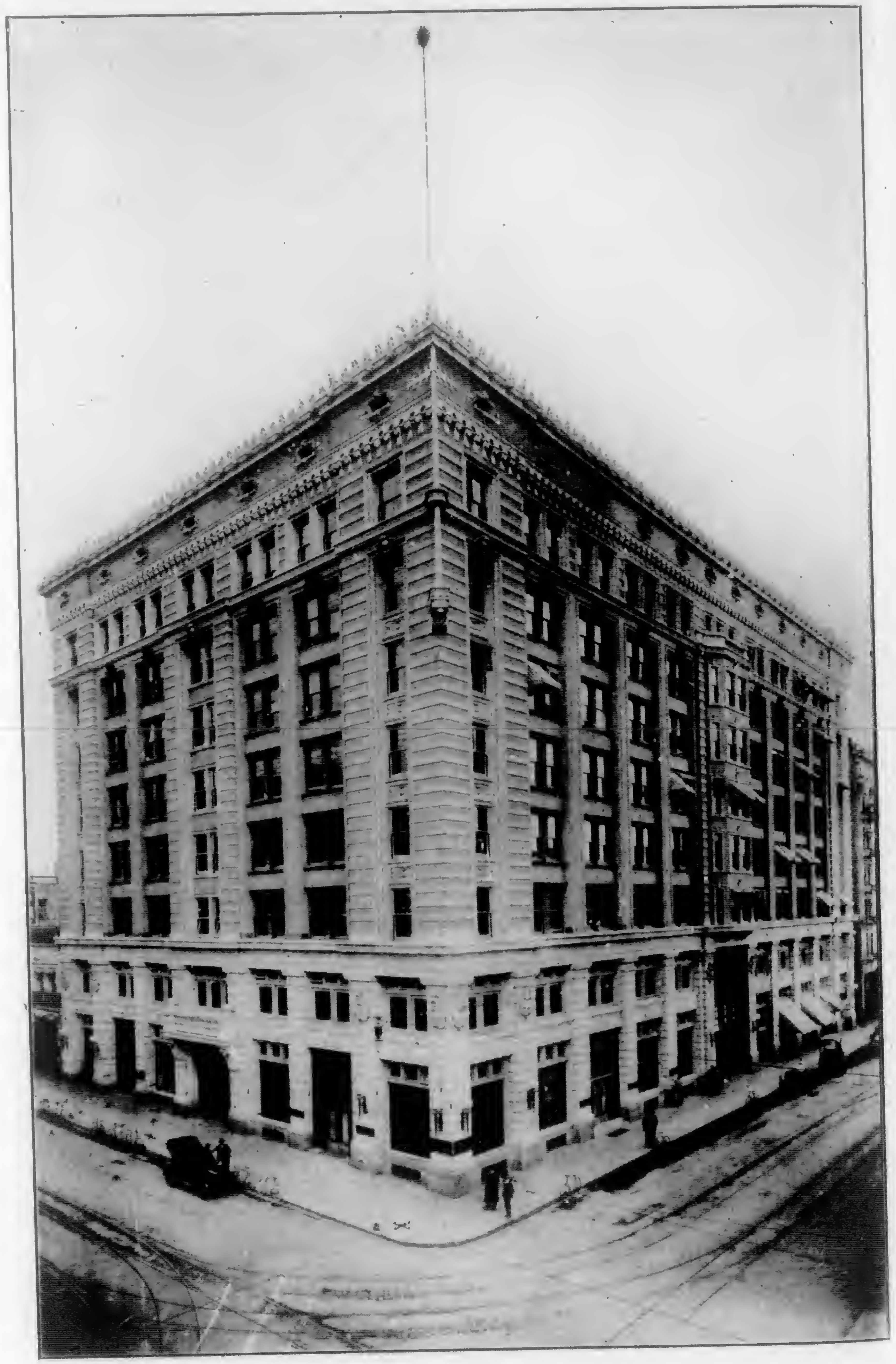
It was in the fall of 1879 that Mr. Rosenheim, with a view to the establishment of a solid ground-work for the architectural profession, which he had at that time determined to study and master, proceeded to the Massachusetts Institute of Technology at Boston. His abilities soon attracted the notice of the faculty, and when he departed in the summer of 1881, it was with the encomiums of highly pleased preceptors.



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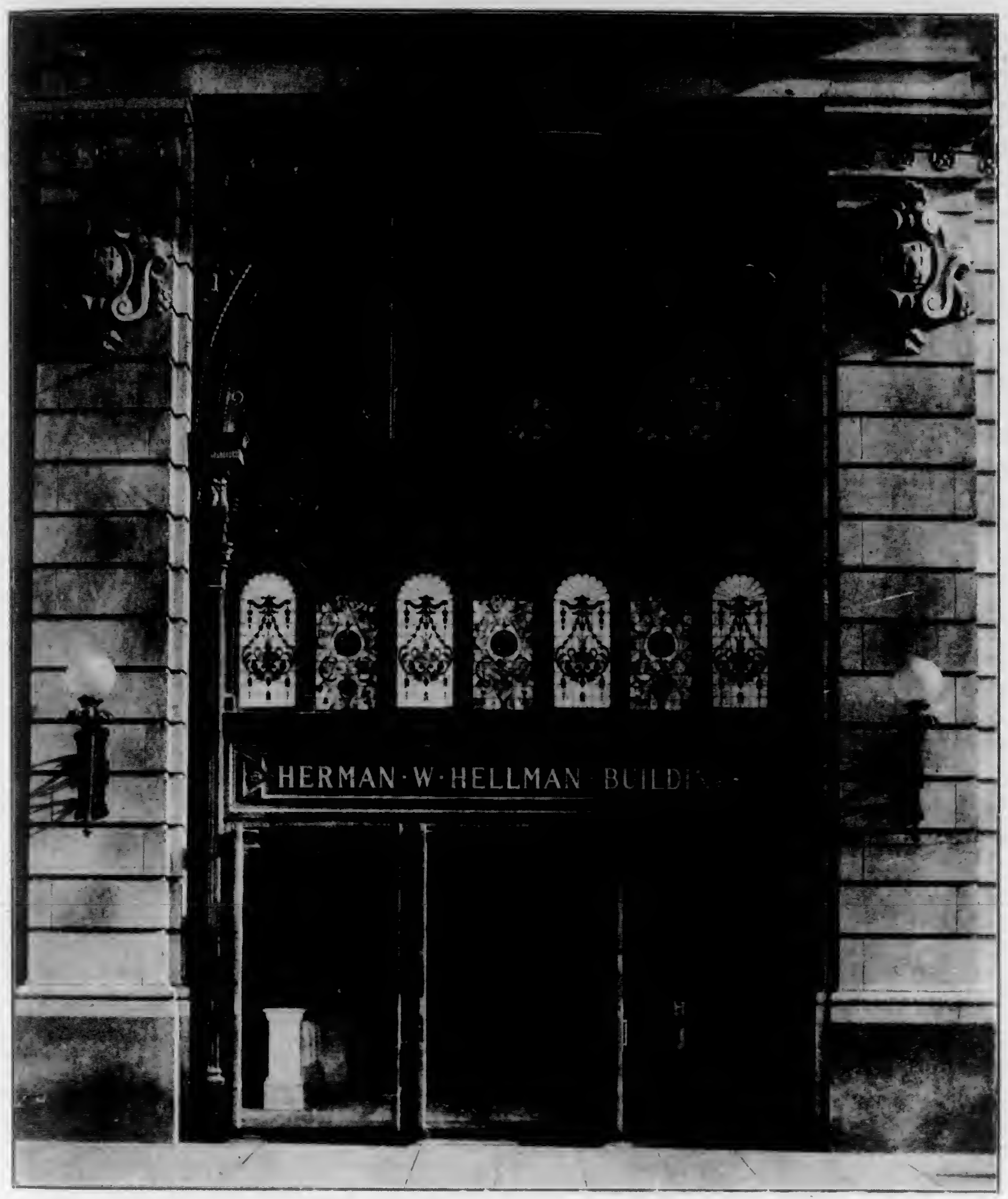

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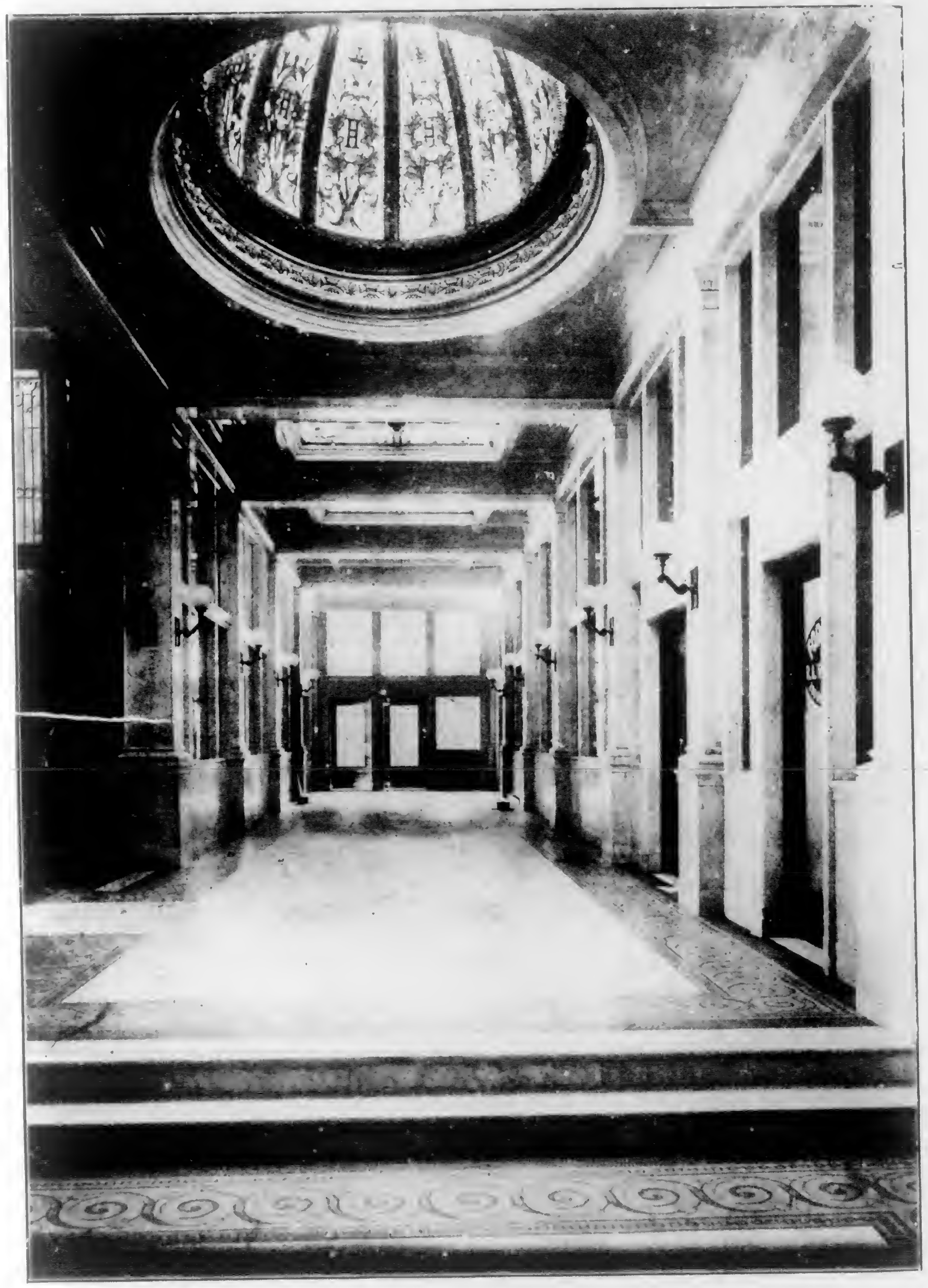
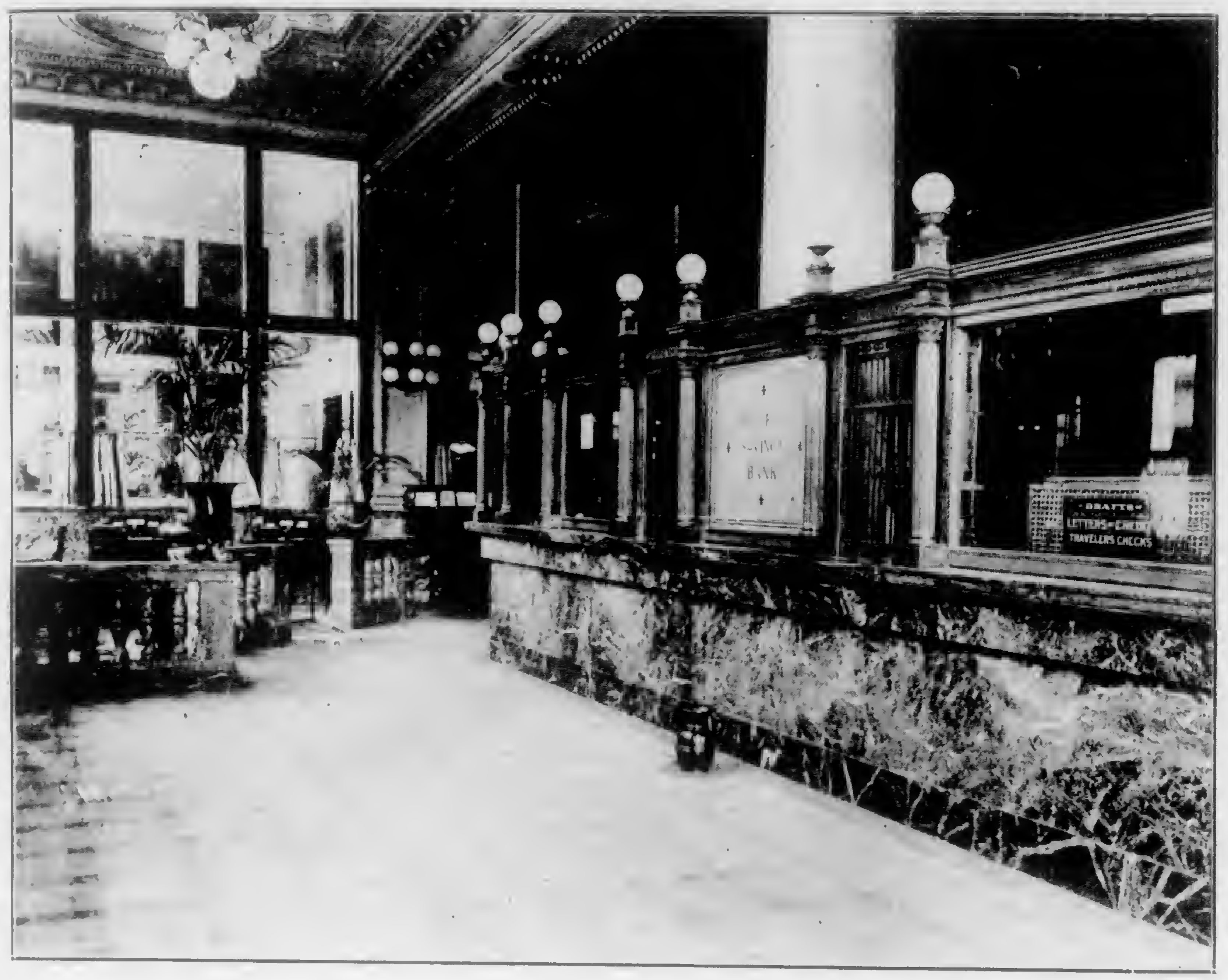


Corridor, Spring Street Entrance, Herman W. Hellman Building, Los Angeles



Security Savings Bank in the Herman W. Hellman Building, Los Angeles

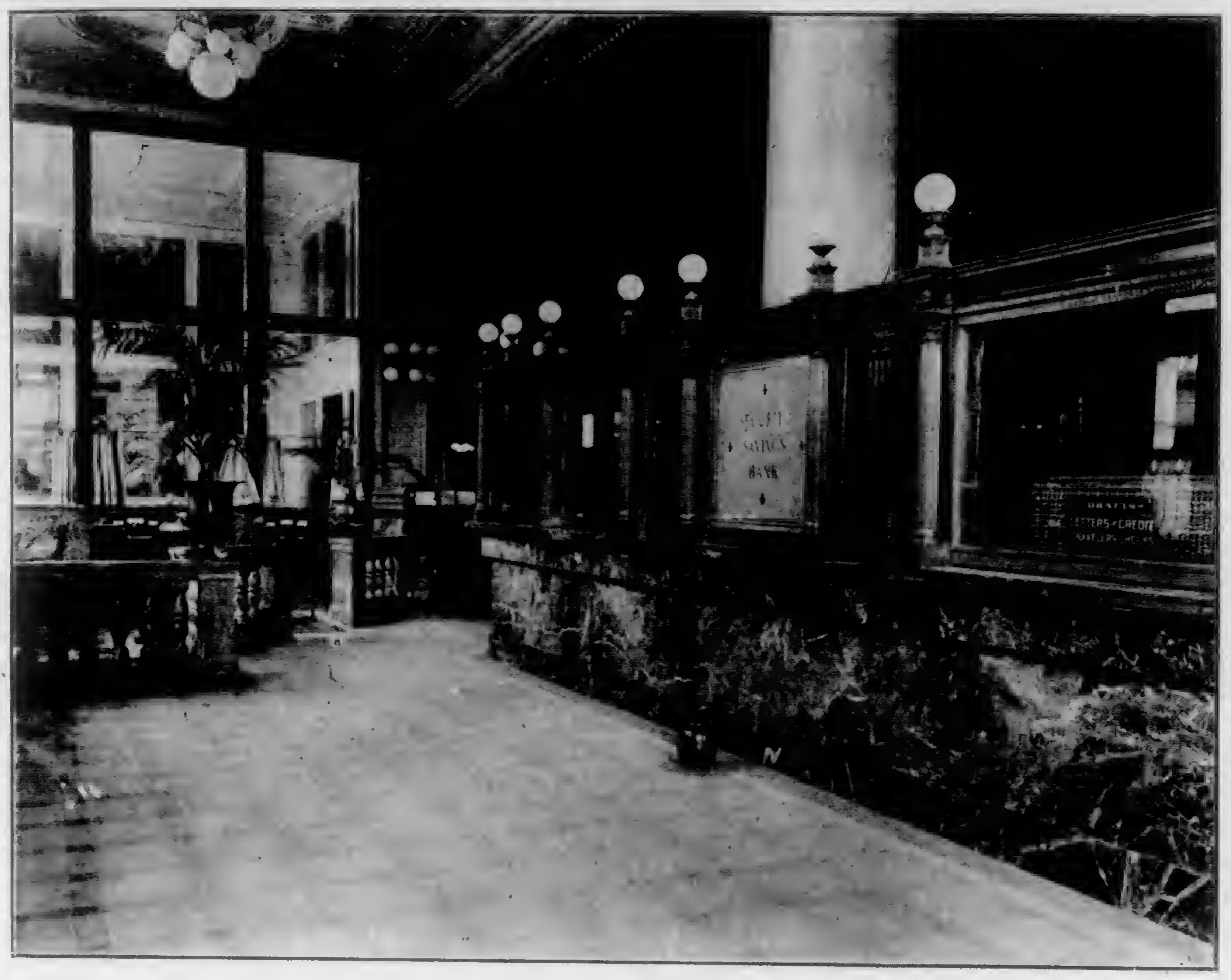
Next came the actual opening of the young student's career as an architect. From the date of his leaving the Institute of Technology, until January, 1884, Mr. Rosenheim made his home in Boston, serving creditably in the offices of some of the foremost architects, among them Ware & Van Brunt, Peabody & Stearns, Hartwell & Richardson, George D. Rand and Carl Fehmer.

In the early part of 1884, Mr. Rosenheim returned to St. Louis and became associated with the office of Charles K. Ramsey, one of the most prominent architects of that city. A year later he transferred his activities to the office of Major Francis D. Lee, at that time the leading architect of St. Louis. When Major Lee died in the fall of 1885, Mr. Rosenheim succeeded to his unfinished business, and on January 1, 1886, undertook to practice on his own account.

Late in 1894 a partnership, formed with T. C. Link and W. B. Ittner, was the next important event in Mr. Rosenheim's career, the business title being enlarged to Link, Rosenheim & Ittner. This partnership continued until the summer of 1897, when the firm was dissolved by mutual consent.

Following in the line of his various and meritorious excursions into the wide field of architecture, was the association by Mr. Rosenheim with his younger brother, Samuel F., who had several years before been graduated from the Massachusetts Institute of Technology. While this partnership continued, which it did until the spring of 1899, Mr. Rosenheim devoted himself to the firm's business at Boston, his brother remaining in charge of the St. Louis office.

Corridor, Spring Street Entrance, Herman W. Hellman Building, Los Angeles



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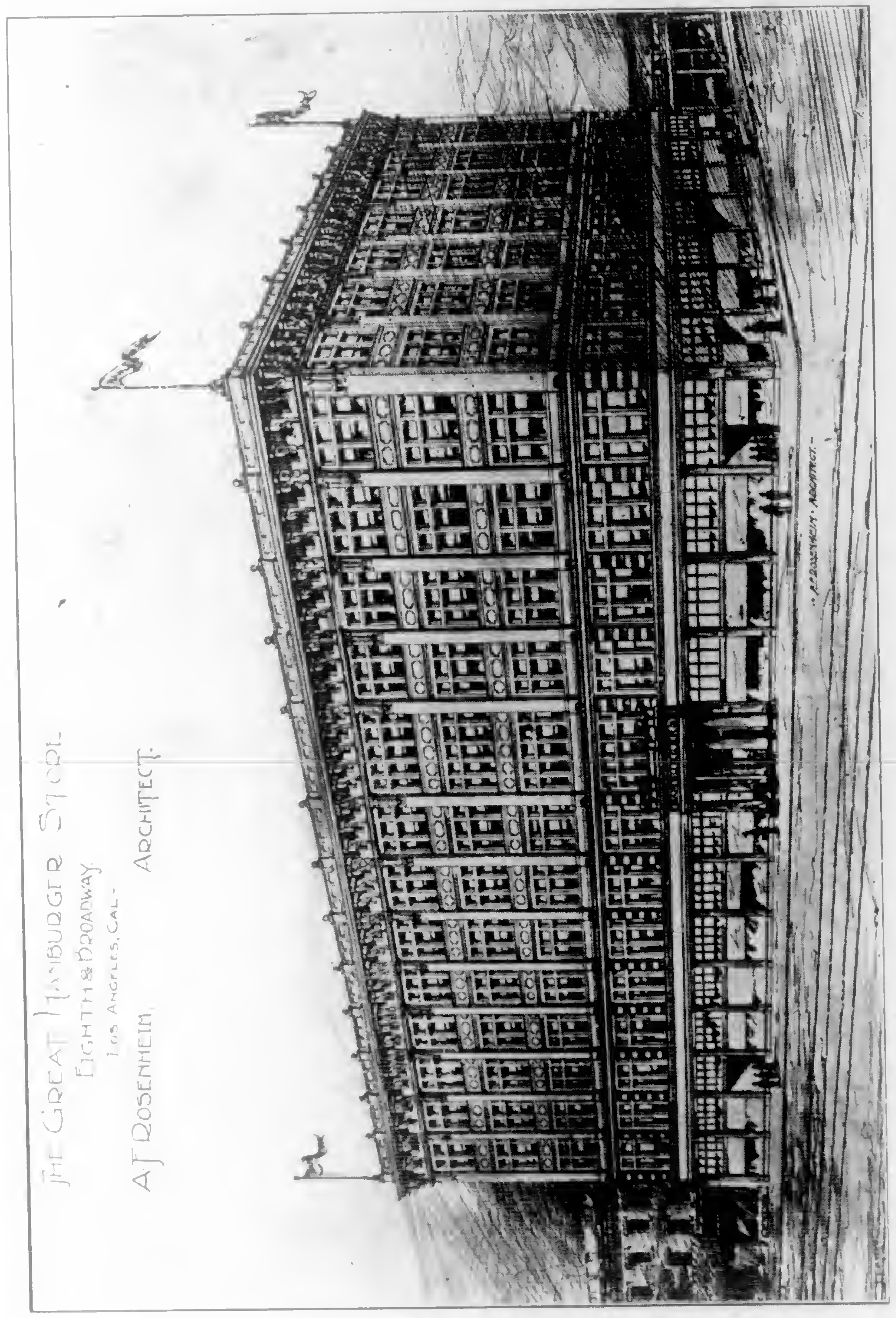
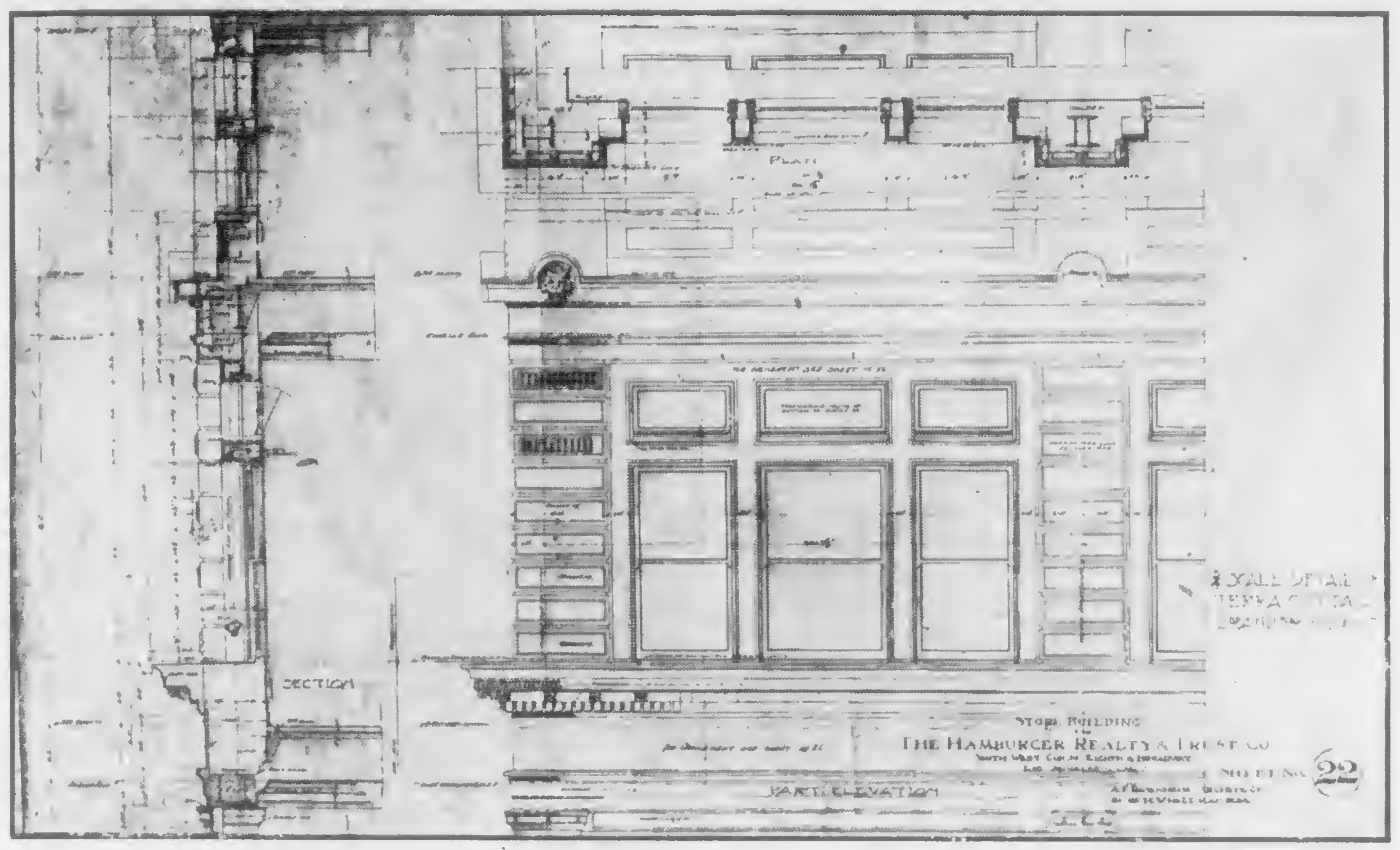

THE GREAT HAMBURGER STORE
EIGHTH & BROADWAY
LOS ANGELES, CAL.
A. F. ROSENHEIM, ARCHITECT.

The Hamburger Department Store Building, Los Angeles, now in course of Construction
A. F. Rosenheim, Architect



Terra Cotta Detail for Hamburger Building, Los Angeles

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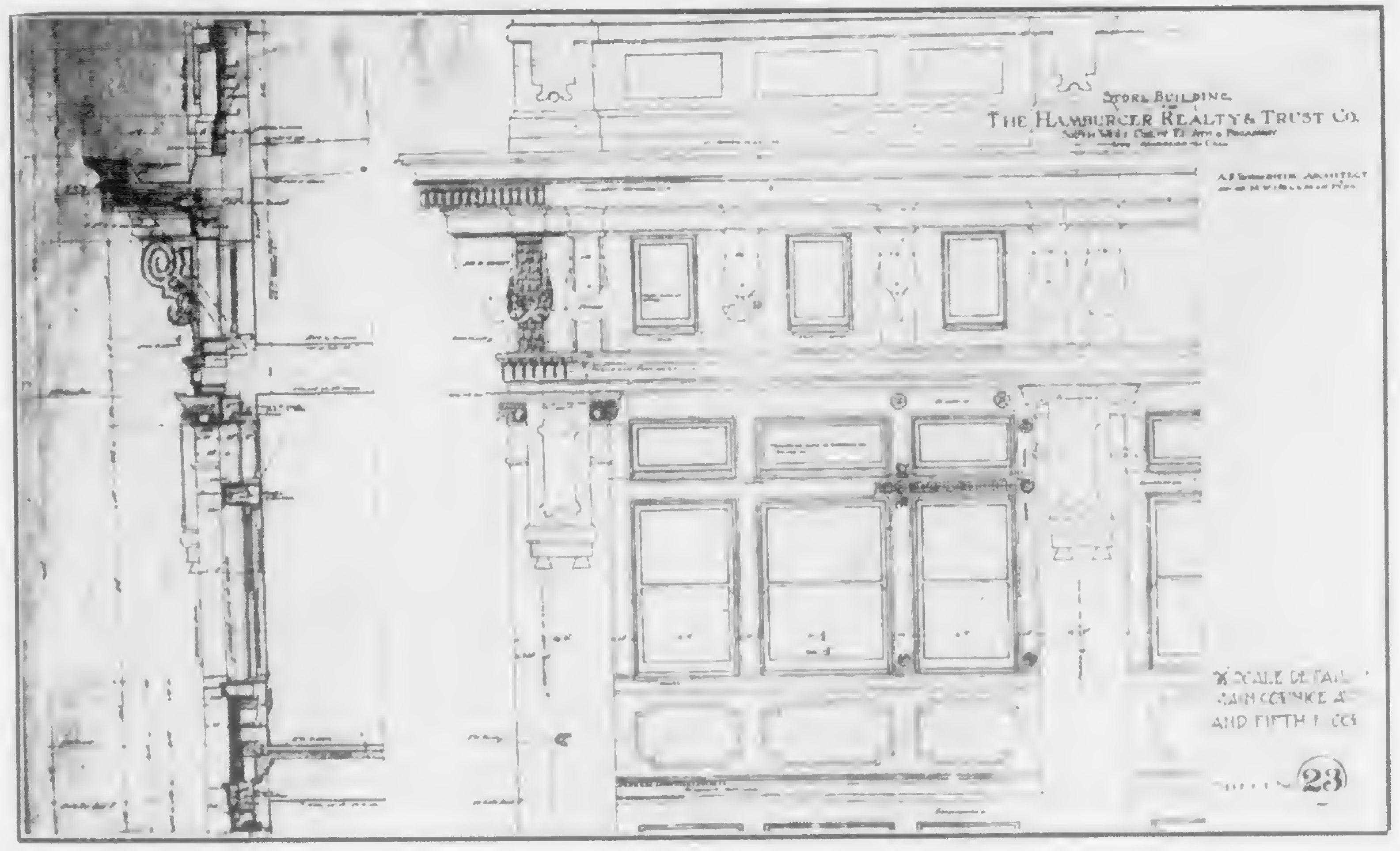
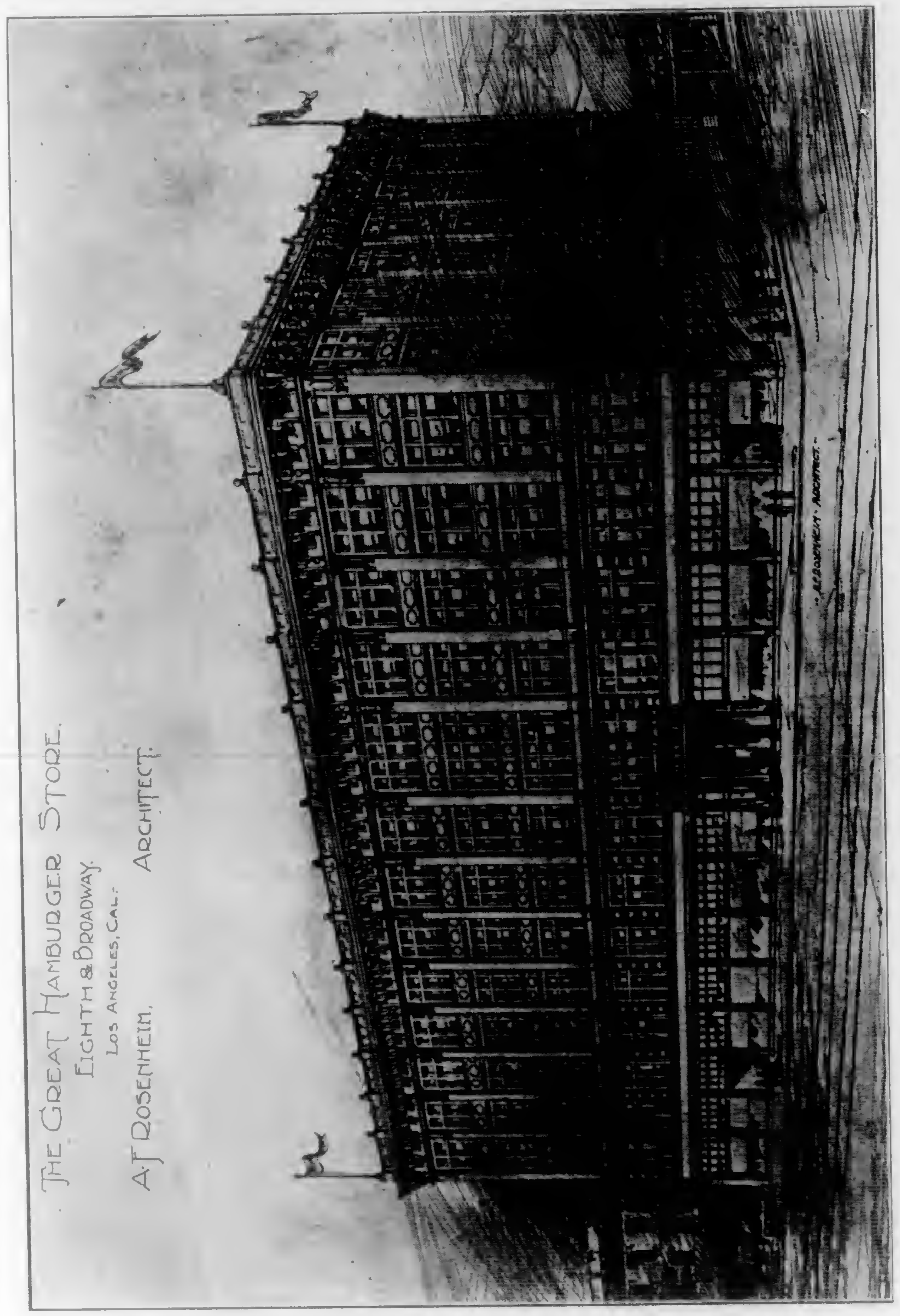
After his Eastern experience of fifteen months, Mr. Rosenheim returned to St. Louis and remained there until 1903, when he removed to Los Angeles.

His sole purpose in coming West was to take personal charge of the erection of the Herman W. Hellman building, and for more than a year



Cornice Detail for Hamburger Building, Los Angeles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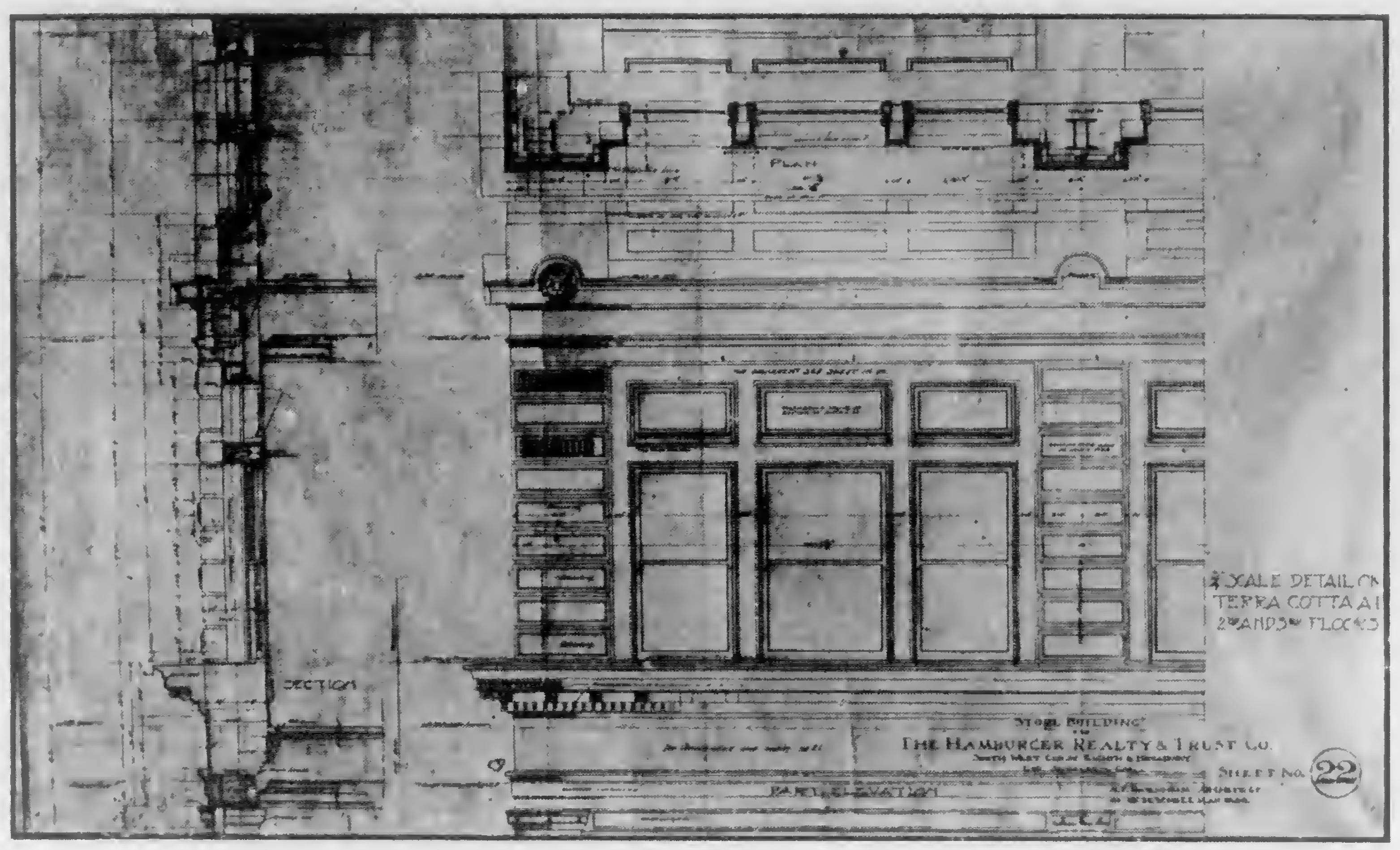
SECTION
¾ SCALE DETAIL OF TERRA COTTA A
3RD AND 5th FLOORS
STORE BUILDING
THE HAMBURGER REALTY & TRUST CO.
SHEET No. 22

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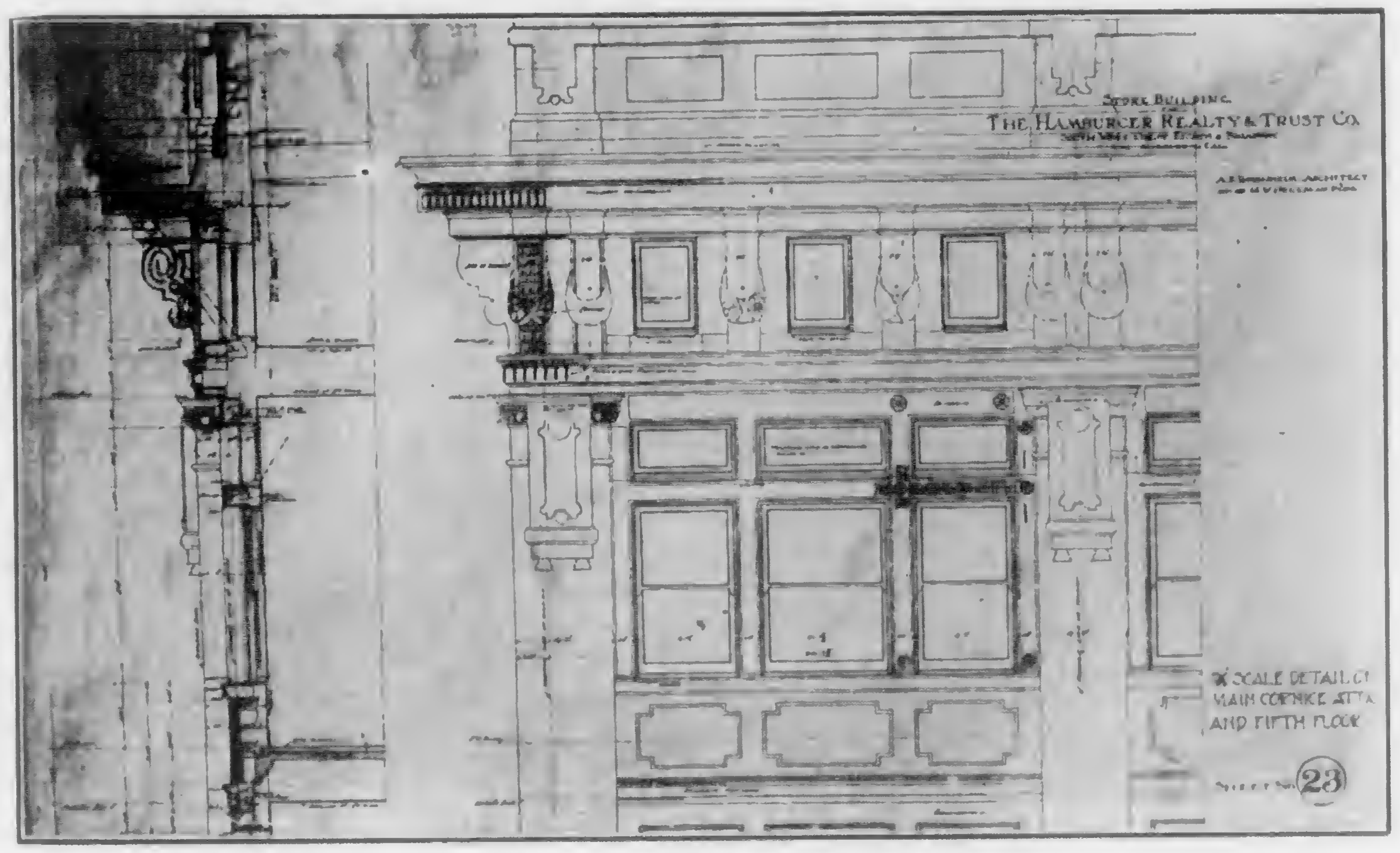
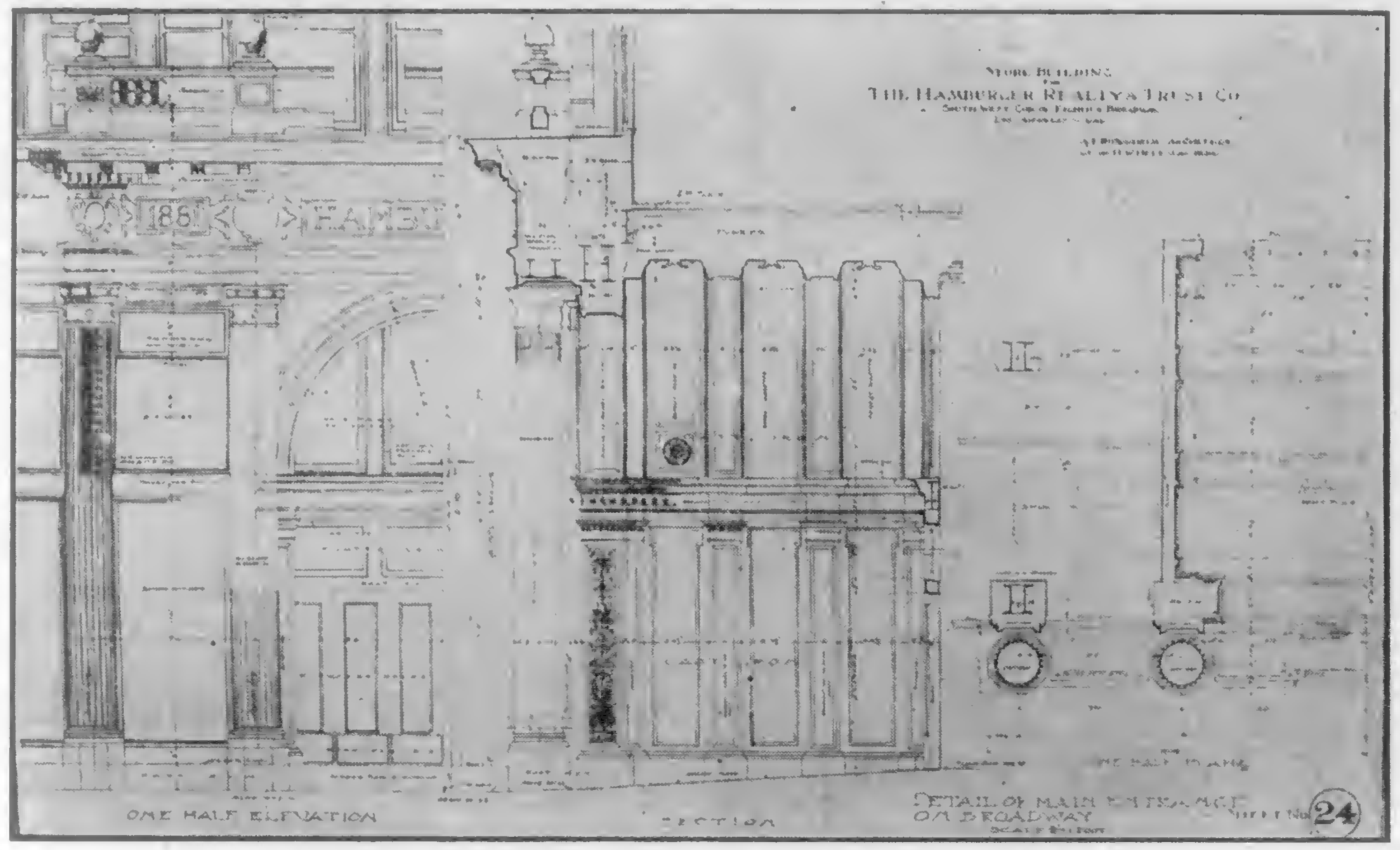


Cornice Detail for Hamburger Building, Los Angeles

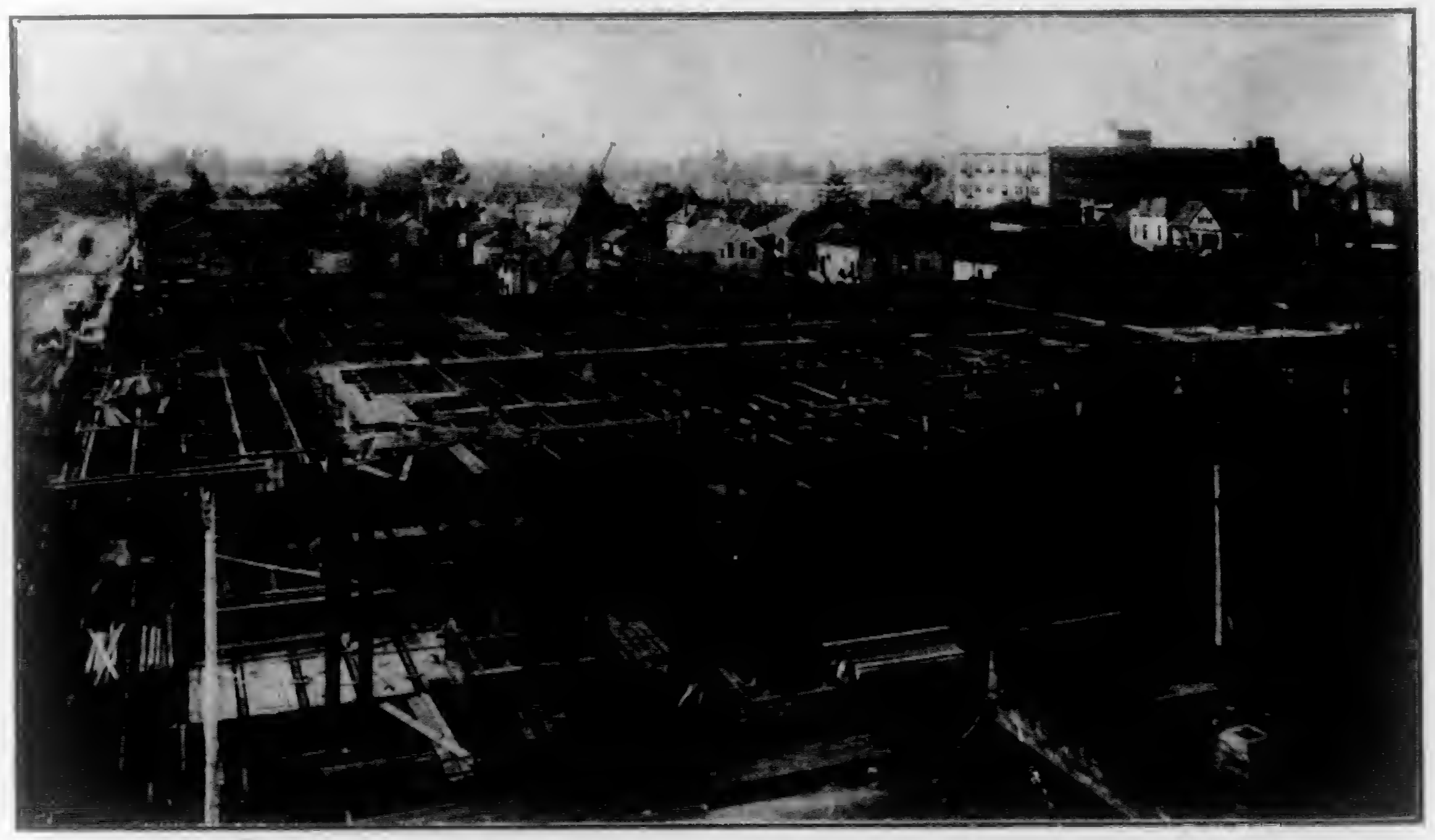

Store Building for The Hamburger Realty & Trust Co.
ONE HALF ELEVATION
SECTION
DETAIL OF MAIN ENTRANCE ON BROADWAY
24

Detail of Main Entrance, Hamburger Building, Los Angeles

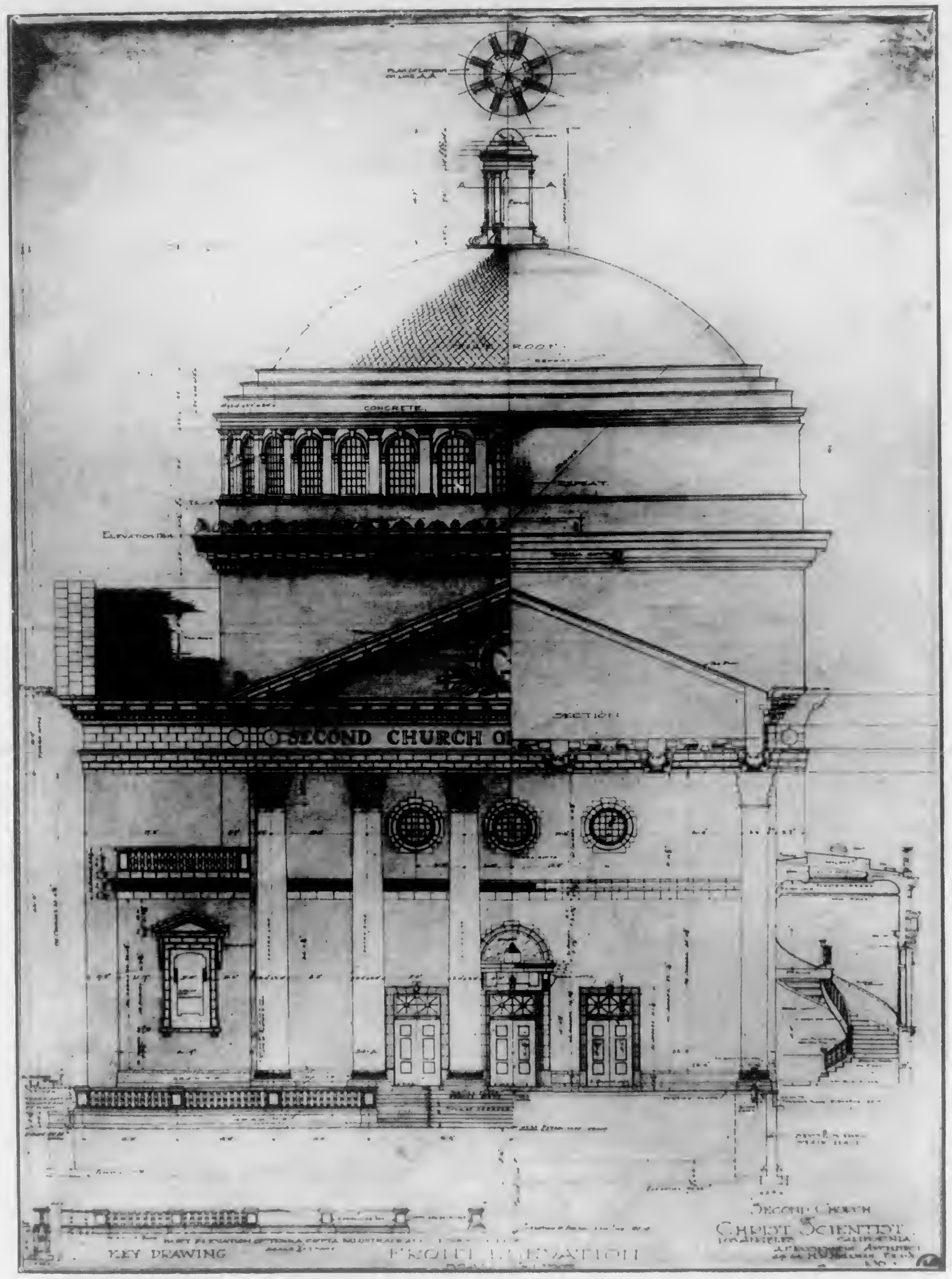
previous to his advent at Los Angeles, he was engaged in the preparation of plans for this structure. The work was started early in February, 1903, and completed in November, 1904.

This eight-story, basement and attic building, which universally is considered the finest architectural monument in Los Angeles, cost about a million dollars. It has a full steel skeleton frame, concrete floors and metal partitions. Its frontage on Spring street is 120 feet, and on Fourth street 190 feet.

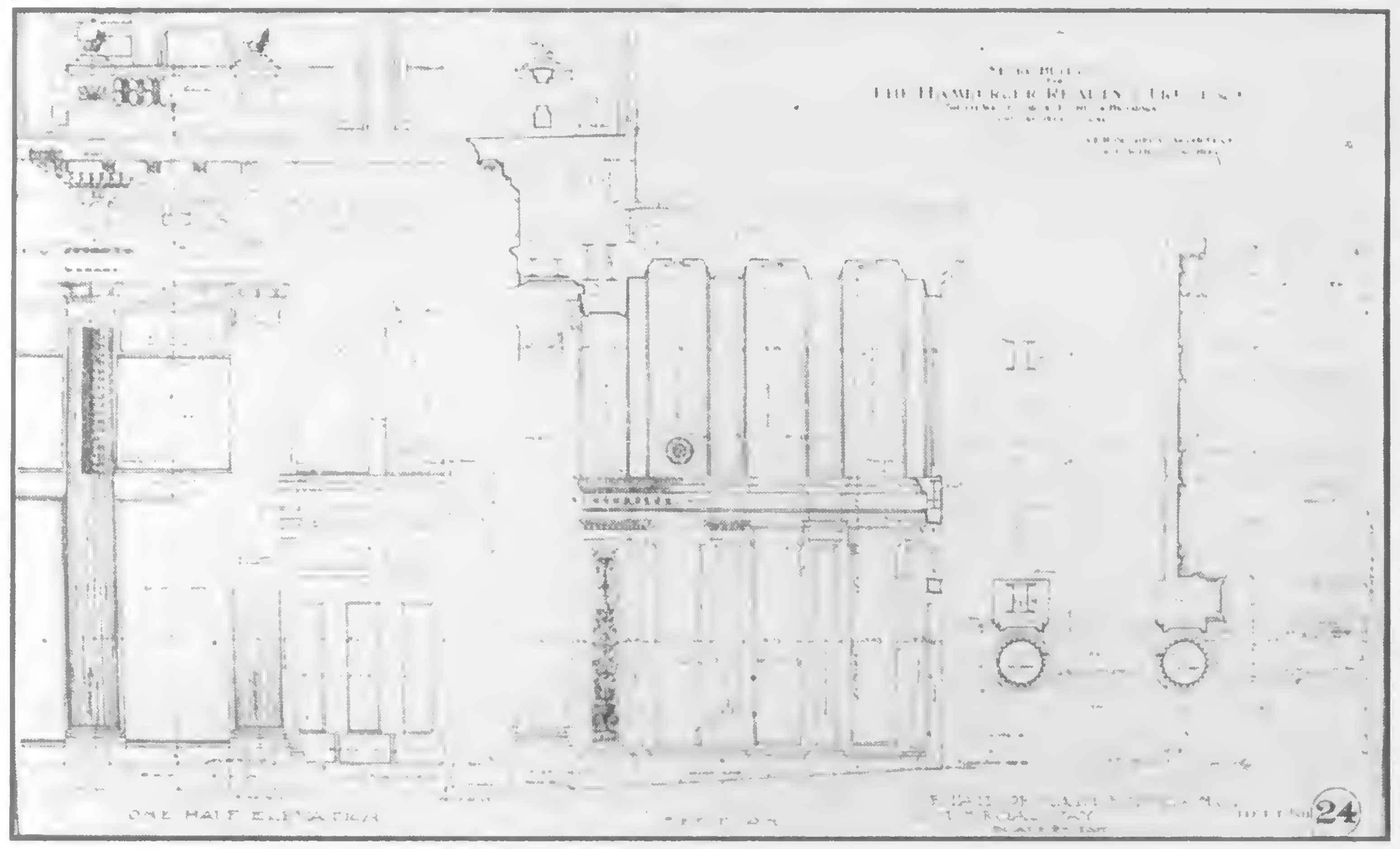
For its size, it is without question one of the most costly office



Photograph taken March 1st, Showing Progress of Steel Work on the Hamburger Building, Los Angeles



Front Elevation, Second Church of Christ, Scientist



Detail of Main Entrance, Hamburger Building, Los Angeles

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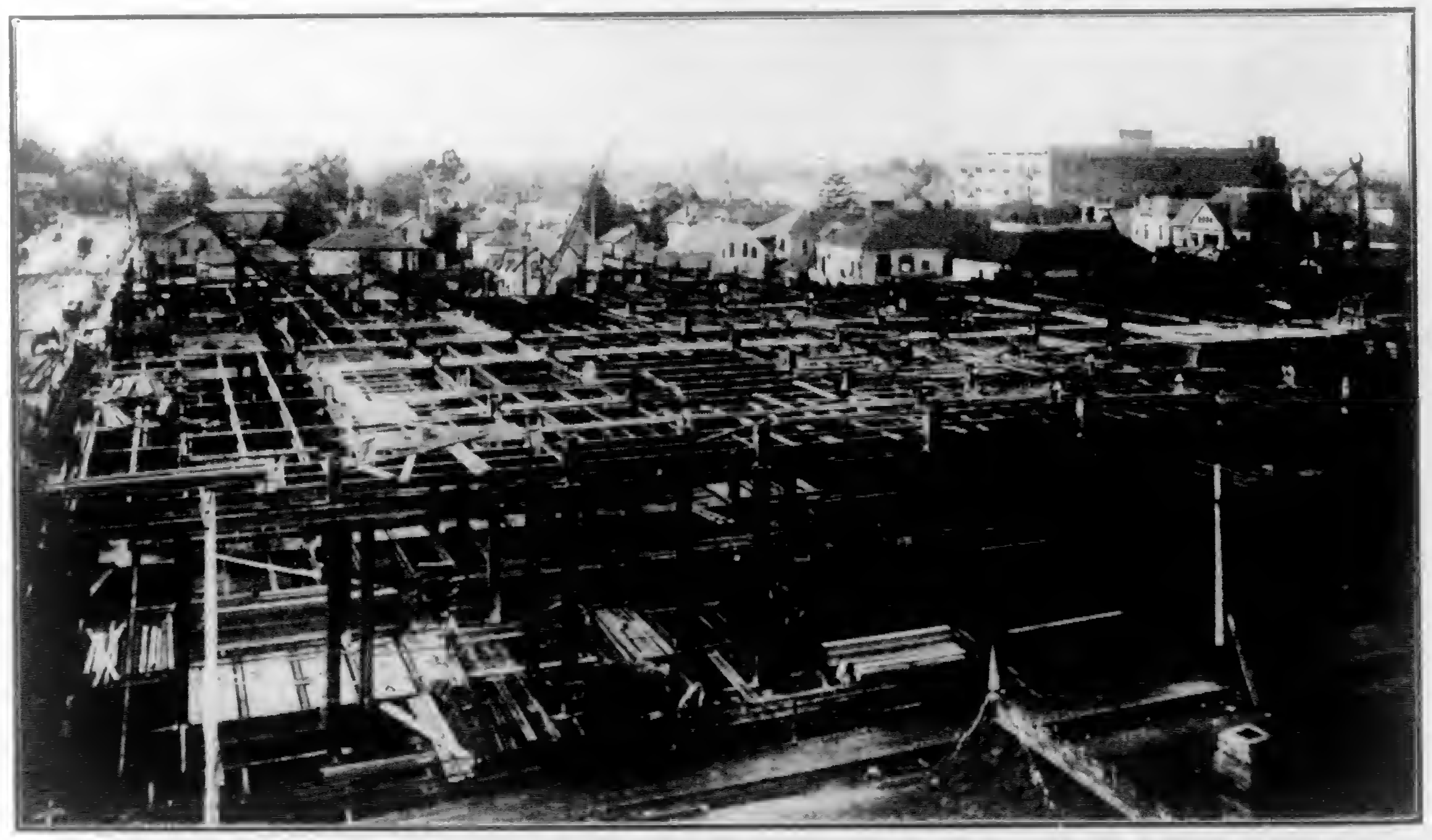

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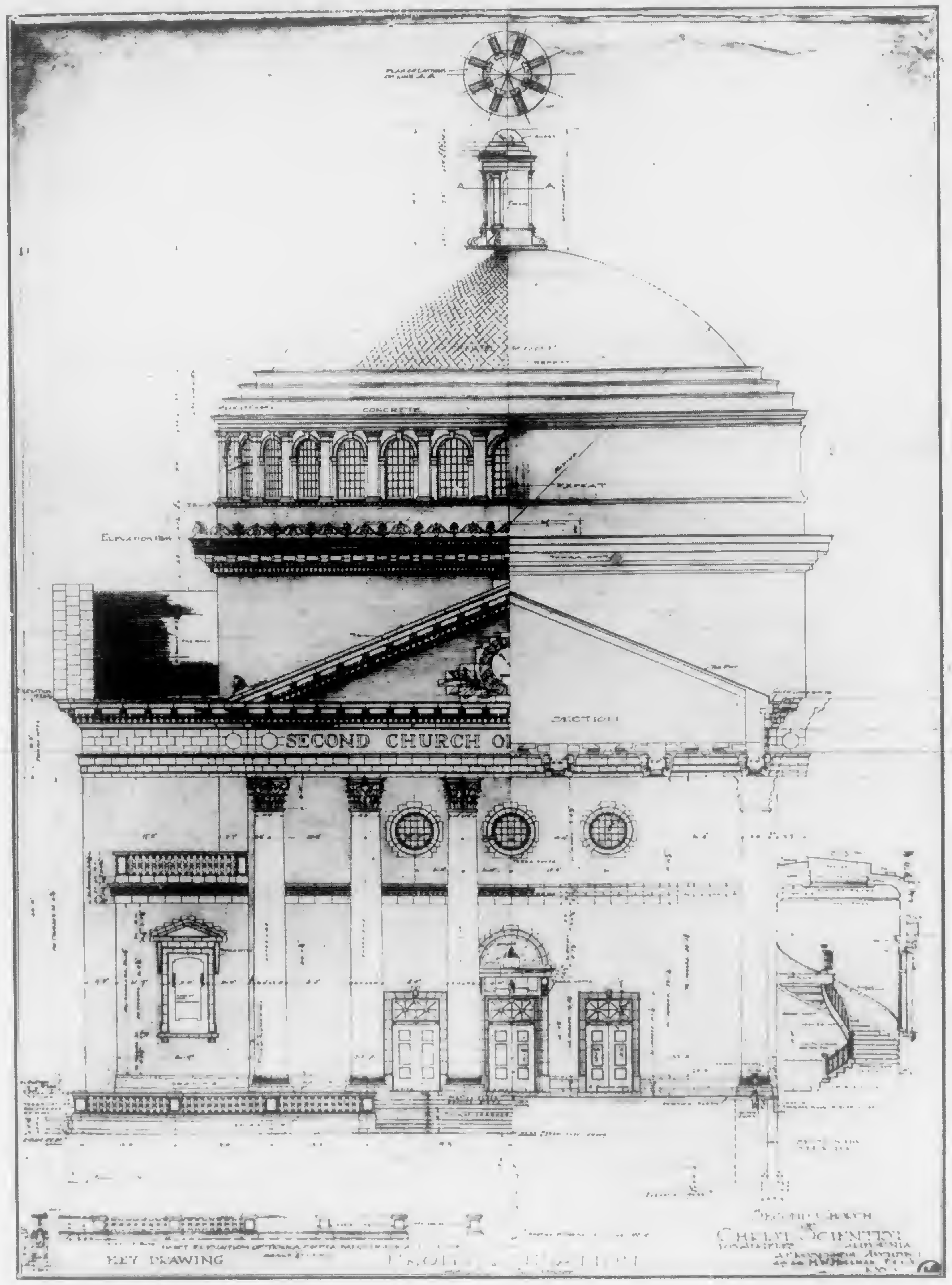
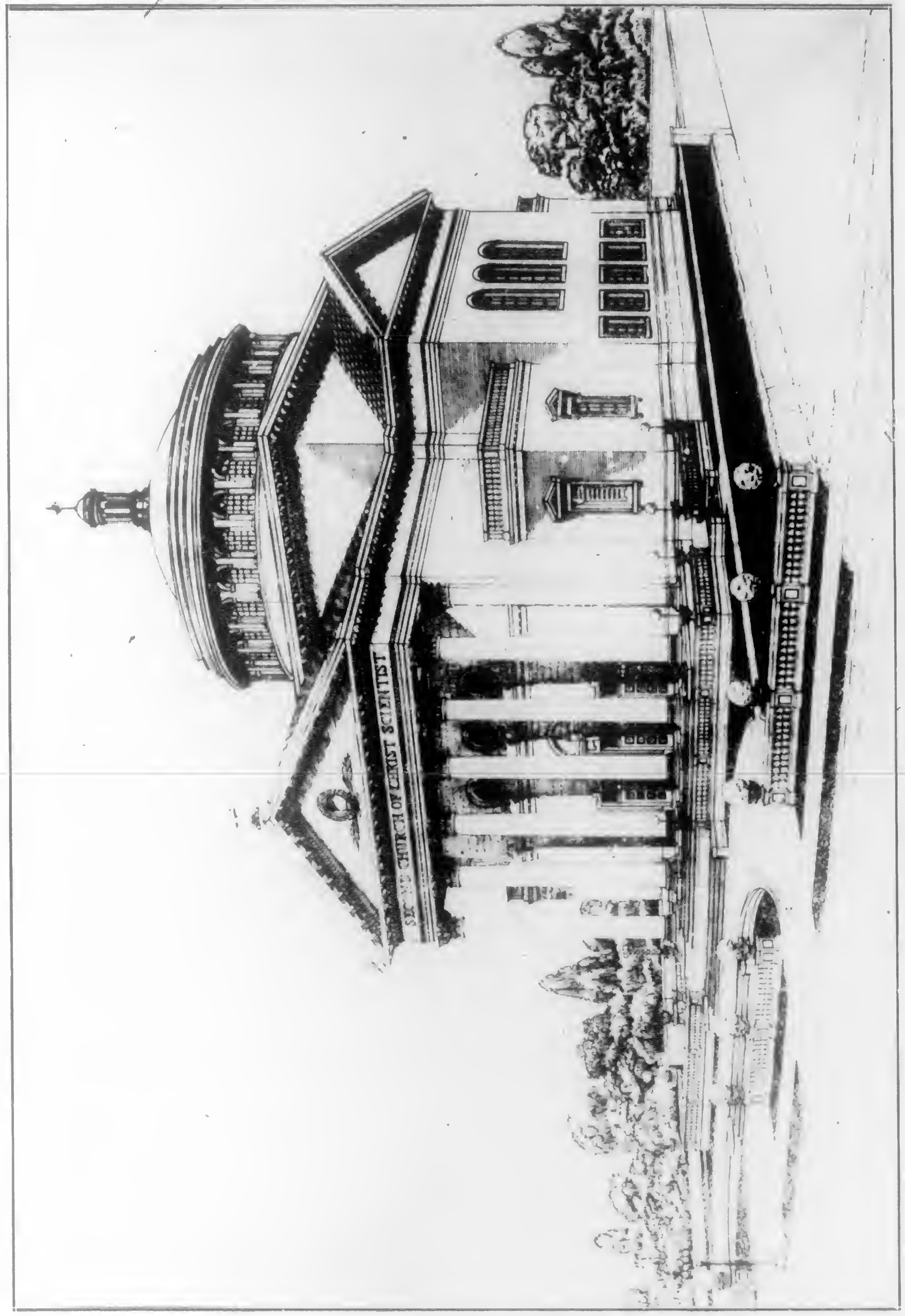
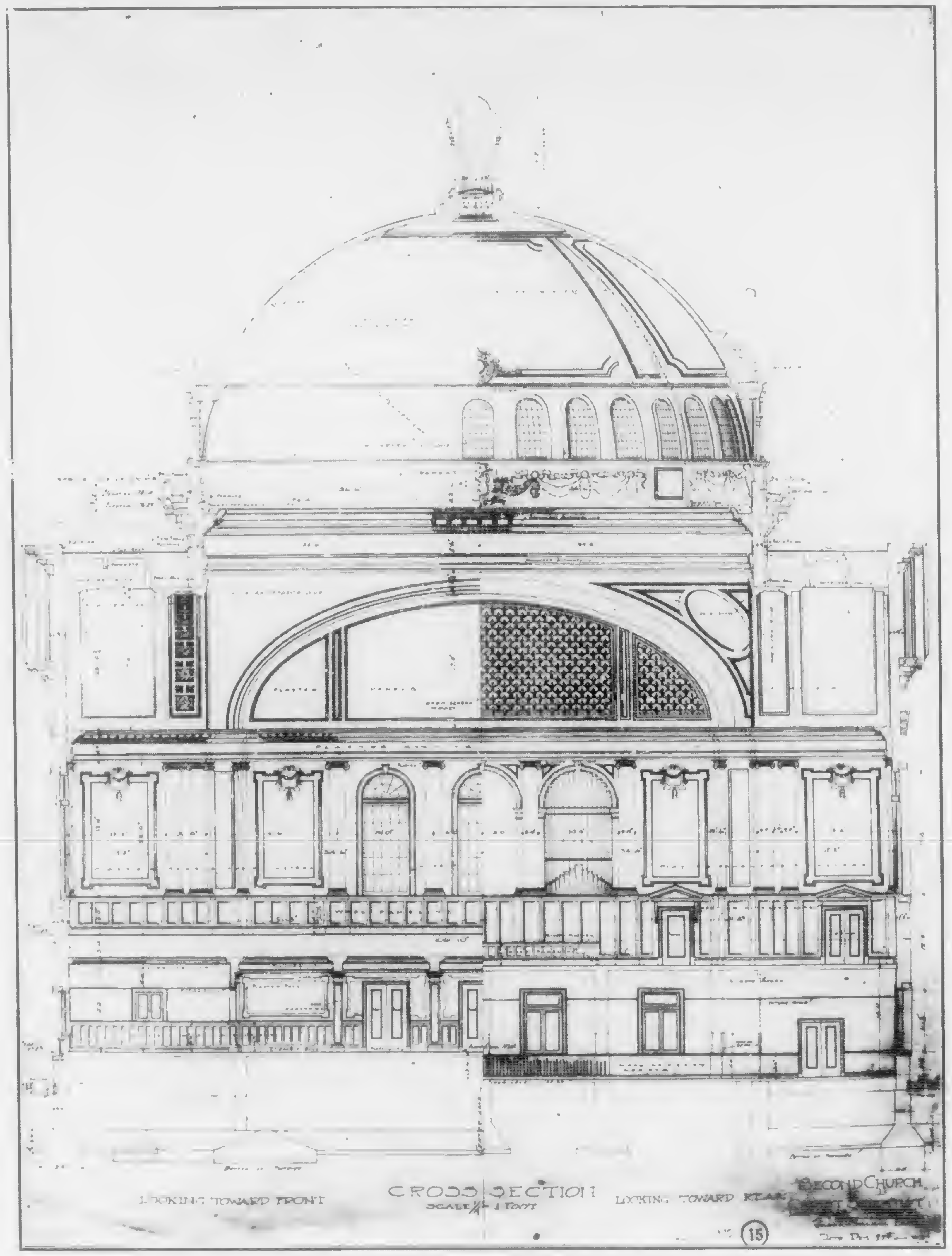


Front Elevation, Second Church of Christ, Scientist

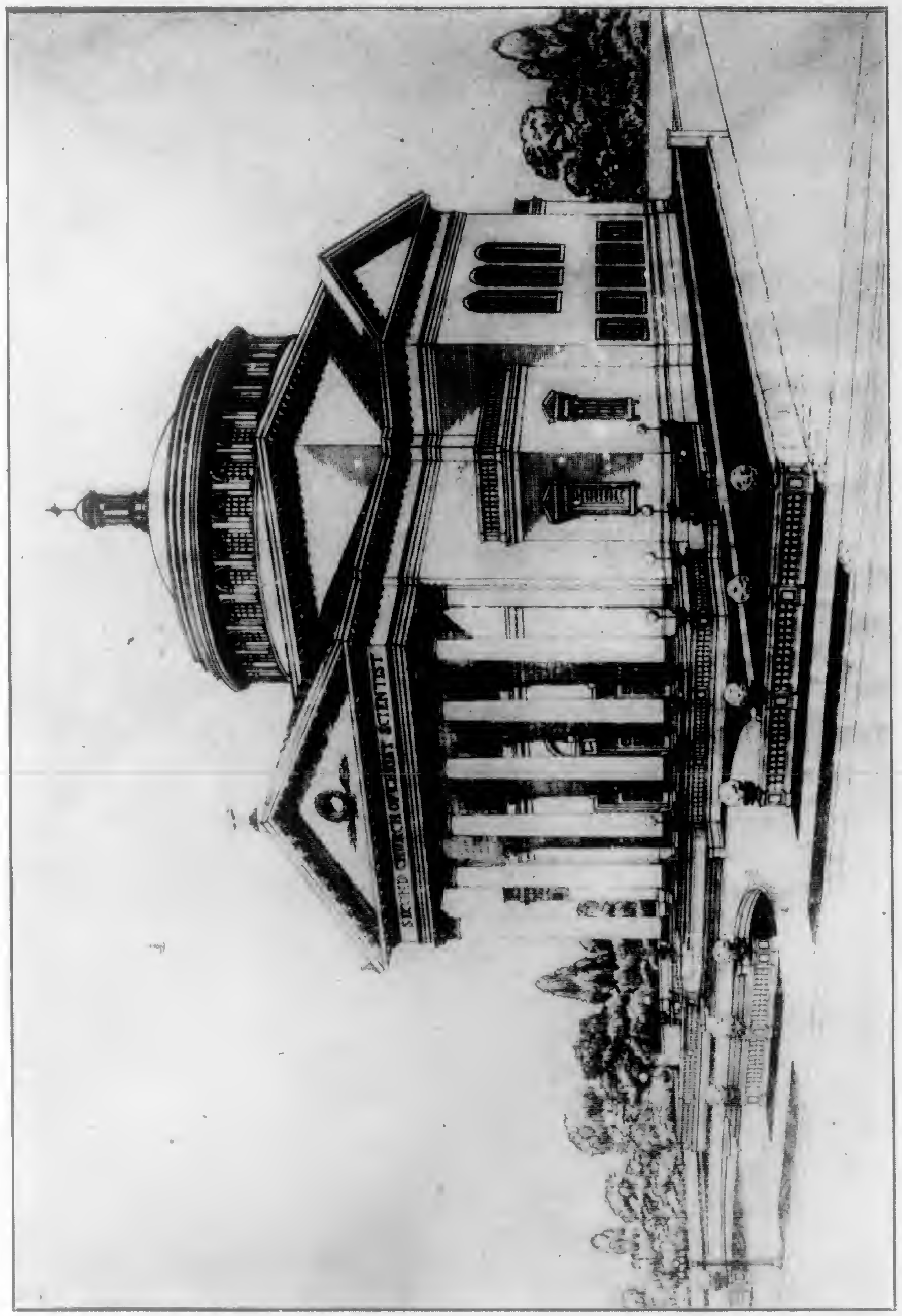

SECOND CHURCH OF CHRIST SCIENTIST

Second Church of Christ, Scientist, Los Angeles
A. F. Rosenheim, Architect



Cross Section, Second Church of Christ, Scientist, Los Angeles

buildings in the United States. No expense was spared to make it complete in every conceivable feature. Mr. Hellman's early home in the far days of the pueblo was upon that corner, and he had the building erected so that it should always remain a precious possession of the family. A short time before his untimely and greatly-regretted death, some months ago, he said to the writer, "If necessity demanded I would willingly part with all I possess except the Herman W. Hellman property at Fourth and Spring streets."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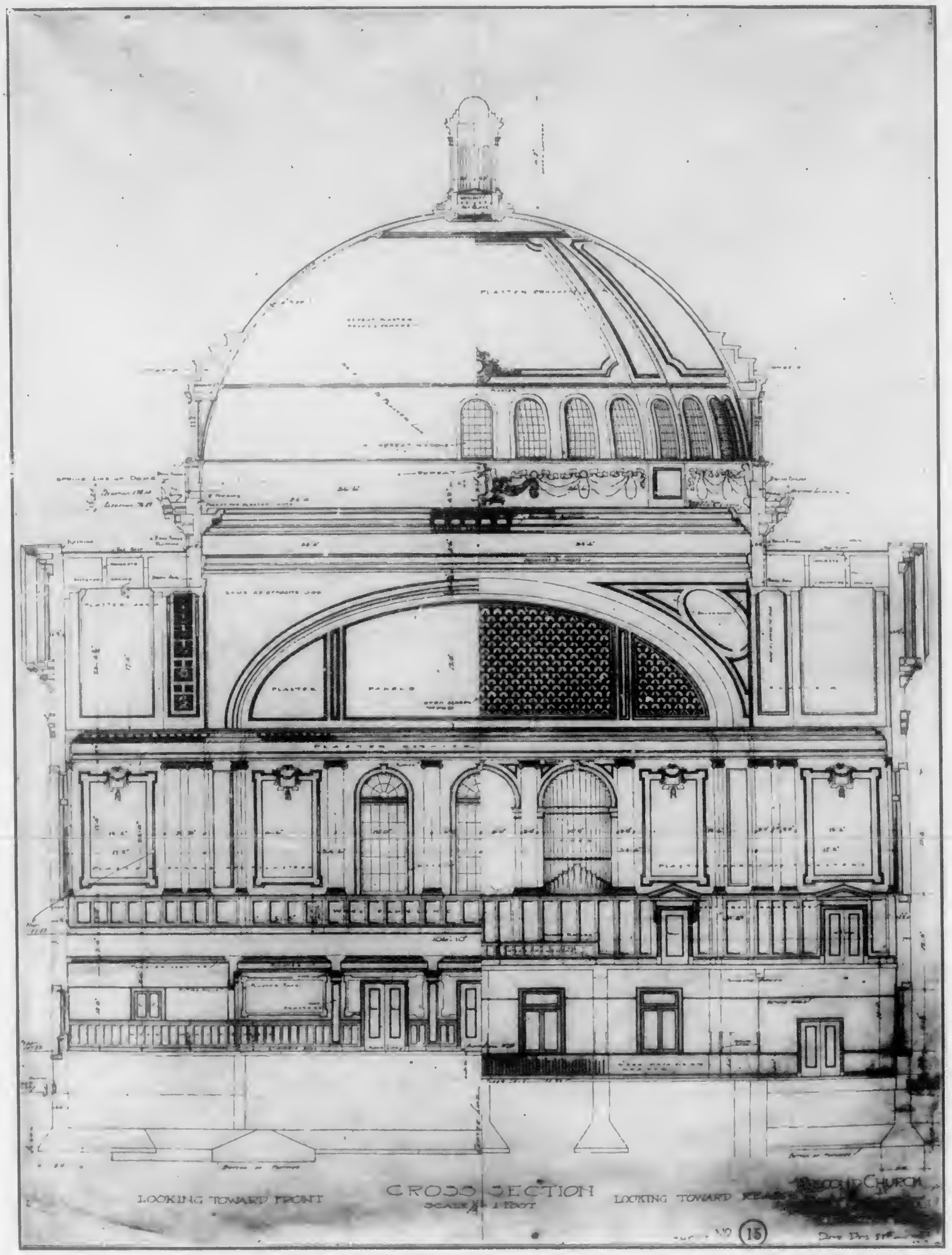
Second Church of Christ, Scientist, Los Angeles
A. F. Rosenheim, Architect



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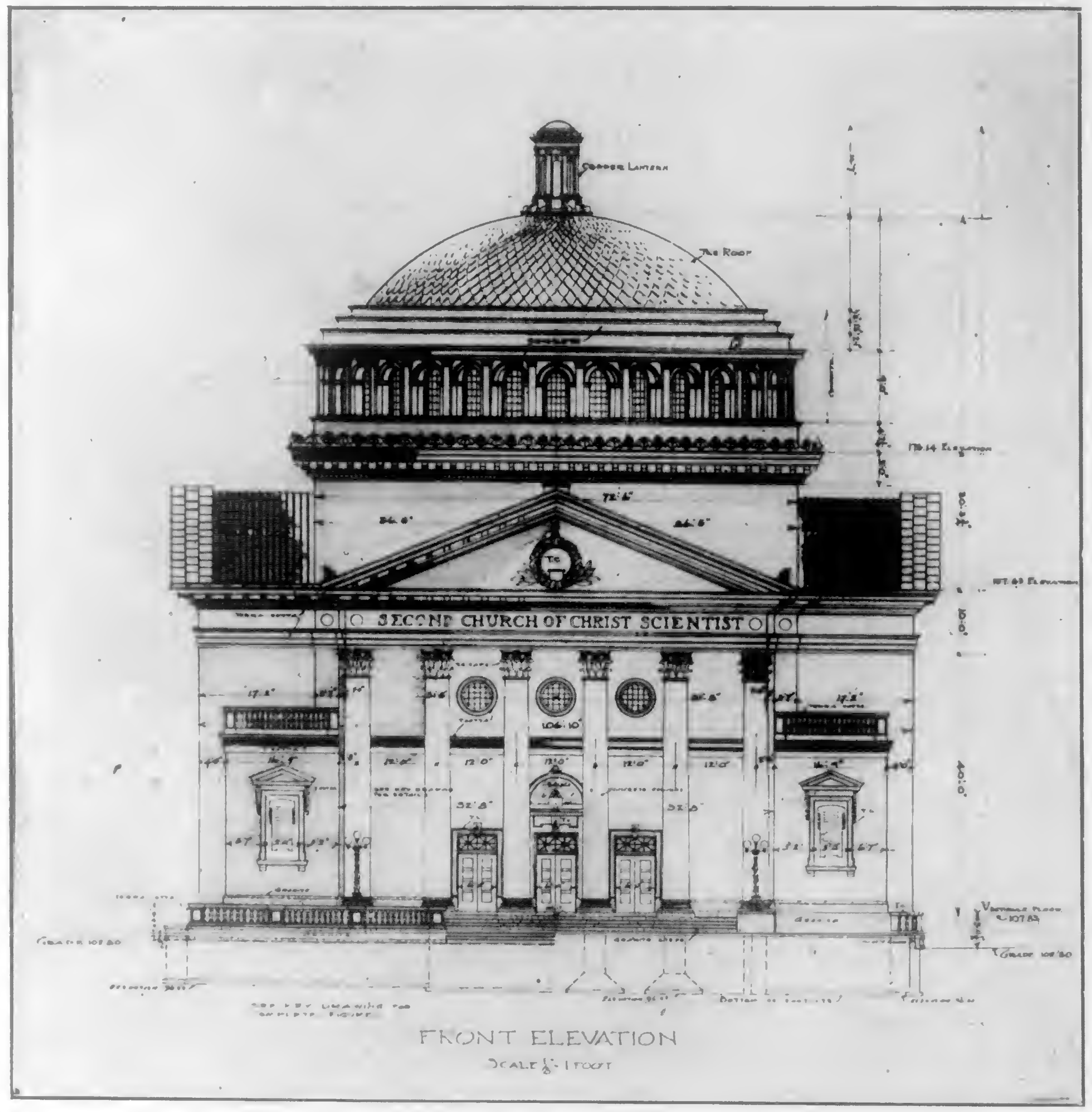


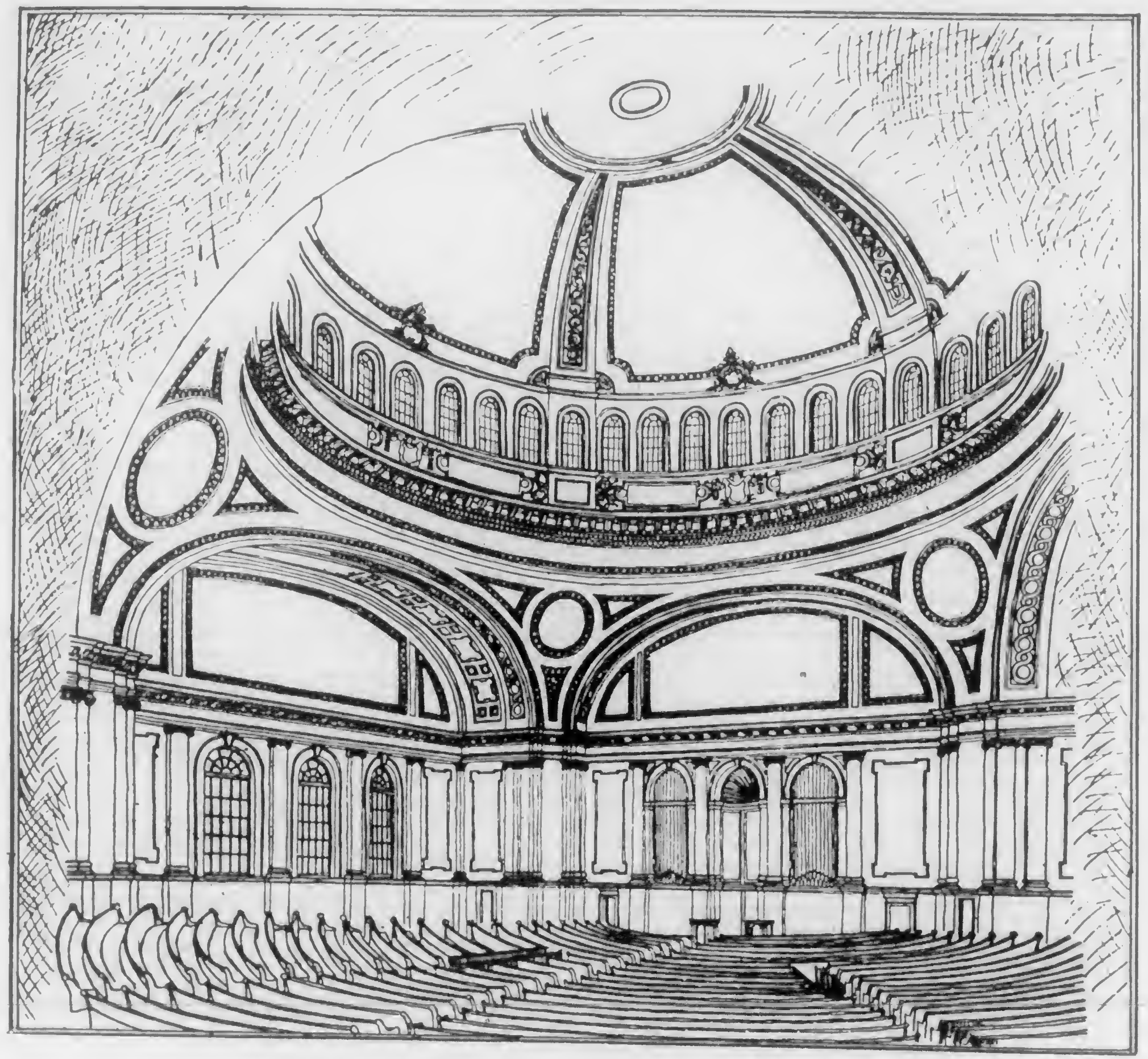
Front Elevation, Second Church of Christ, Scientist, Los Angeles

It should be noted here, as indicative of Mr. Rosenheim's idea for select ornamentation, that the Herman W. Hellman building has for the two lower stories a facing of native gray granite. Above that is gray pressed brick, trimmed with cream colored terra cotta.

The construction of the steel frame is somewhat different from the system ordinarily adopted, in that a sixteen-foot unit was used, which is probably substantially larger than the unit generally found in office buildings in Los Angeles.

Mr. Rosenheim showed additionally his architectural ability by making the Hellman building corridors on the main floor sixteen and twenty-five feet, and on all other floors uniformly eight feet. In these corridors marble is extensively used for decorative effect.

Nothing more effectively demonstrates the high station of Mr. Rosenheim as an architect, in a city constantly resounding with the implements of builders, than his appointment by A. Hamburger & Sons Co., to design and direct the erection of their gigantic department store at Broadway, 8th and Hill streets, work on which is now well under way and will be completed and occupied before the end of the present year.



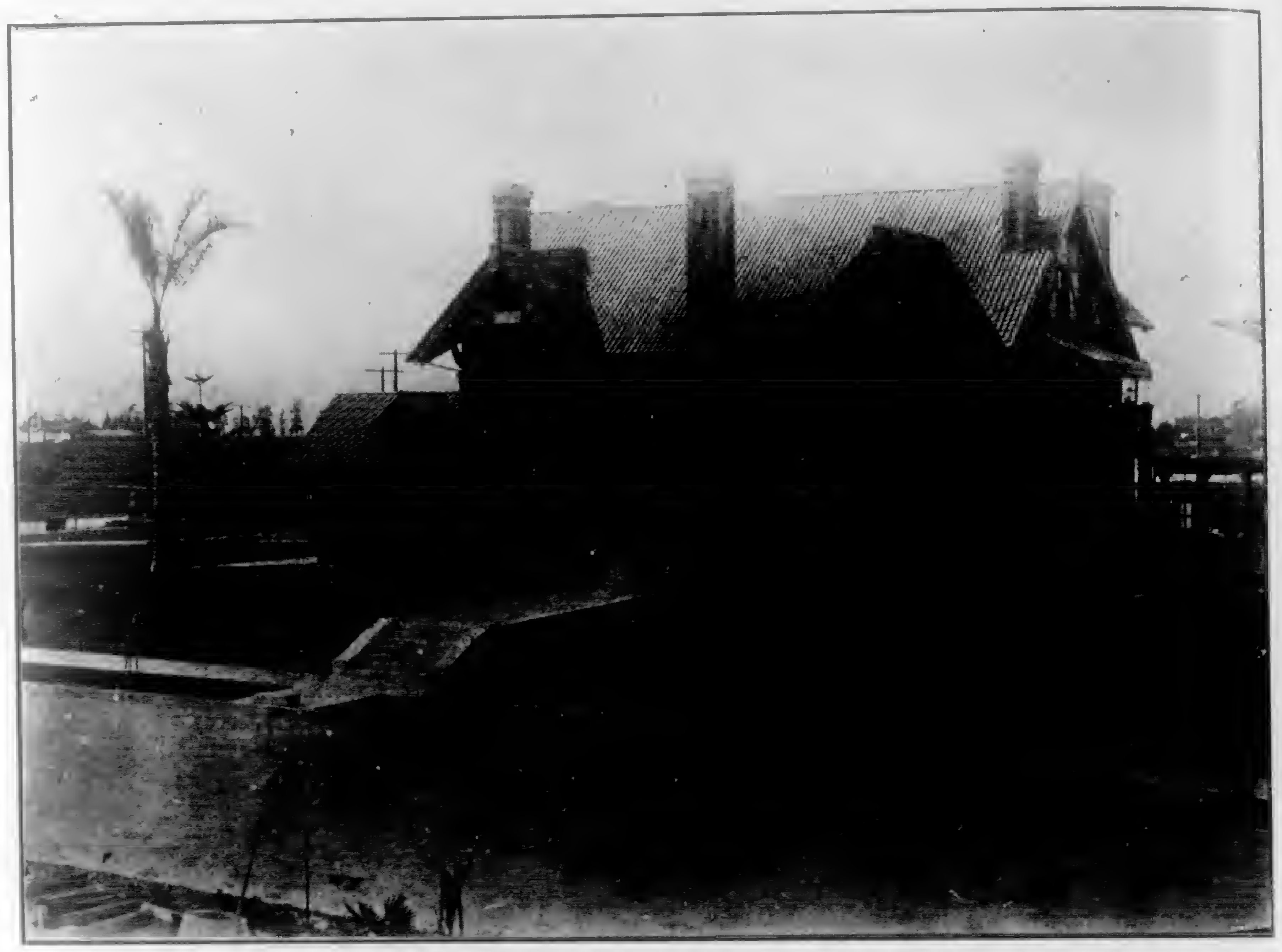
Interior, Second Church of Christ, Scientist, Los Angeles

This enormous structure will cost at least $2,000,000, will have a street frontage of about 800 feet, and an actual ground area of more than 80,000 square feet, making it the largest building of its kind west of Chicago. The frame is of steel, the floors will be of concrete and the partitions of porous terra cotta tile. The steel frame is so designed that two additional stories may be erected later to carry the building up to the 150-ft. limit prescribed in the Los Angeles ordinance.

Mr. Rosenheim has provided in the plans for all features of an up-to-date department establishment, including escalators, gravity package conveyors, hospital and rest rooms, restaurant and grill room, and a complete kitchen outfit. There will be an assembly hall for musicales, lectures and exhibitions and a spacious roof garden for the public and employes.

Even more notable among the features of Mr. Rosenheim's plans for this building is an underground package and heavy freight delivery system; a light, heat and power plant and elaborate arrangements for ice making and refrigeration.

Considering the eminently successful construction of the Herman W. Hellman building, and the indubitably excellent quality of the exten-



General View of House and Grounds of Mr. Robert Marsh, Los Angeles

sive work now going on in the Hamburger Department Store, Mr. Rosenheim may, without the slightest fear or error, be assigned a prominent place in the front rank of American architects. This enviable position has already been accorded him in Los Angeles, where his greatest work is well and favorably known.

In addition to this building Mr. Rosenheim is engaged in the preparation of plans for a large number of buildings to be erected during the present year, one of the most important of which is the Second Church of Christ, Scientist, the contracts having recently been awarded for upwards of $200,000, and the work started. This building is illustrated herewith and will be, when completed, one of the largest of this denomination in the United States, and one of the most important and costly west of New York City.

During his presidency of the Southern California Chapter of the American Institute of Architects, which position he is now filling for the third consecutive term, his earnest endeavors to arouse enthusiasm and develop a purpose among the members of the profession to aim at the highest and best in architecture, has been amply rewarded. The members of the Southern California Chapter have benefited by his suggestions and their work constantly tends toward a superior plane, so that they have, in many cases, won distinction beyond the limits of Los Angeles.

Mr. Rosenheim was a charter member of the St. Louis Chapter of the Institute and filled the office of Secretary continuously from the date of its organization up to the time he went to Boston, a period of eight years.

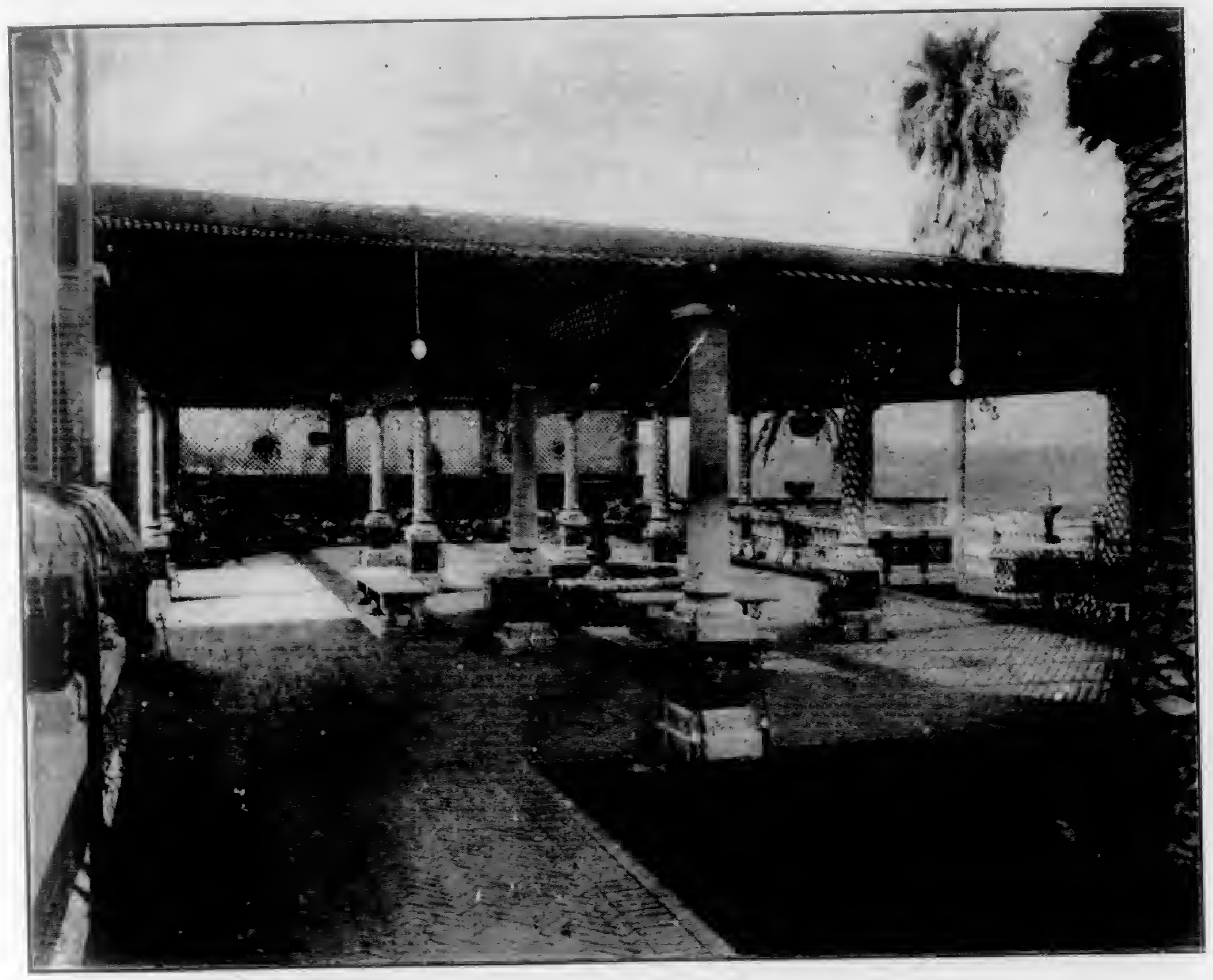
A. F. Rosenheim, Architect

He has also served as member of the Board of Directors of the Institute and frequently on important committees. He has for many years been a prominent figure at the Annual Conventions of the parent body. He is a member of the American Society for Testing Materials, and of the Engineers and Architects' Association of Southern California.

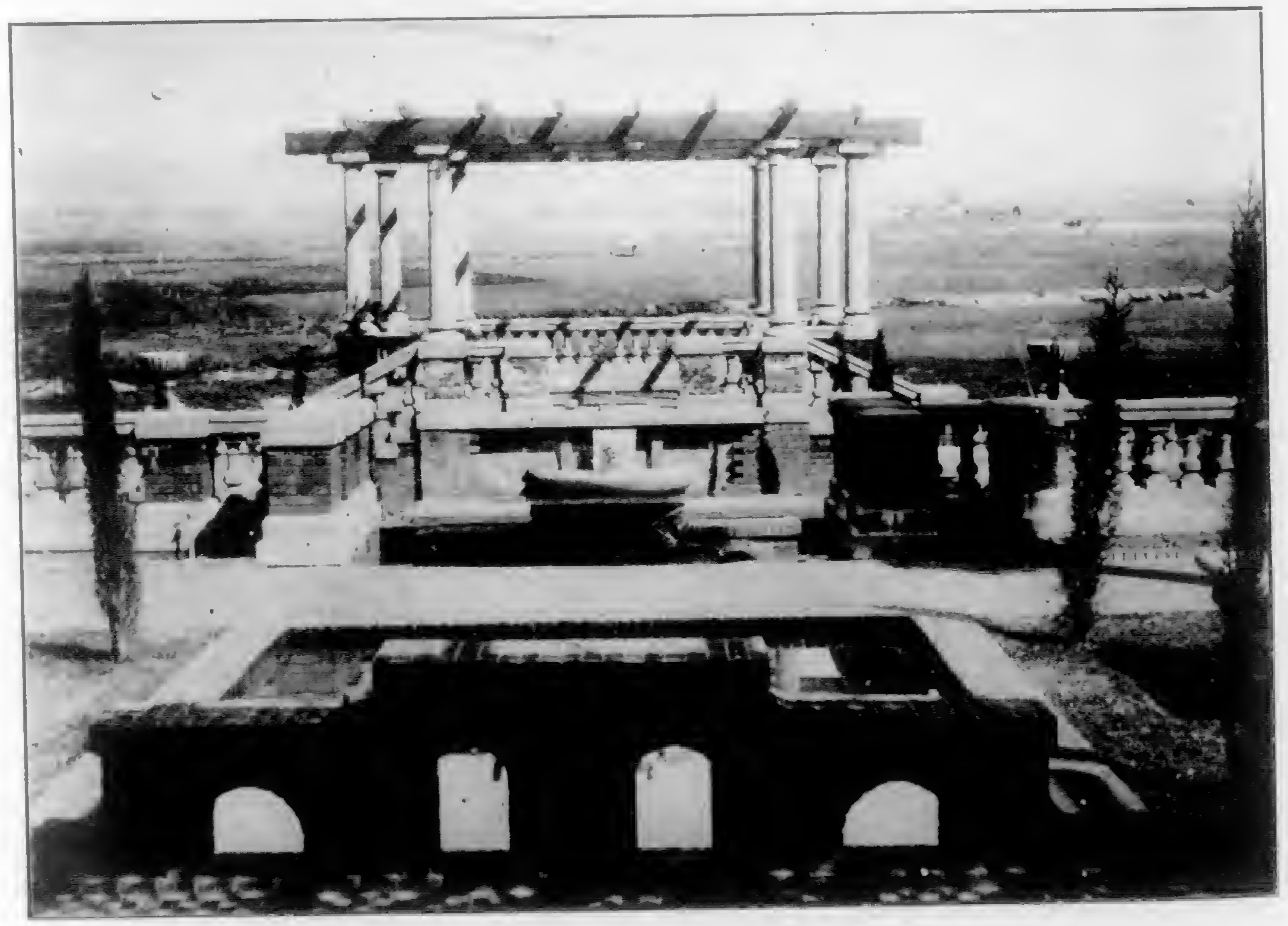
* * *

Effect of Decoration

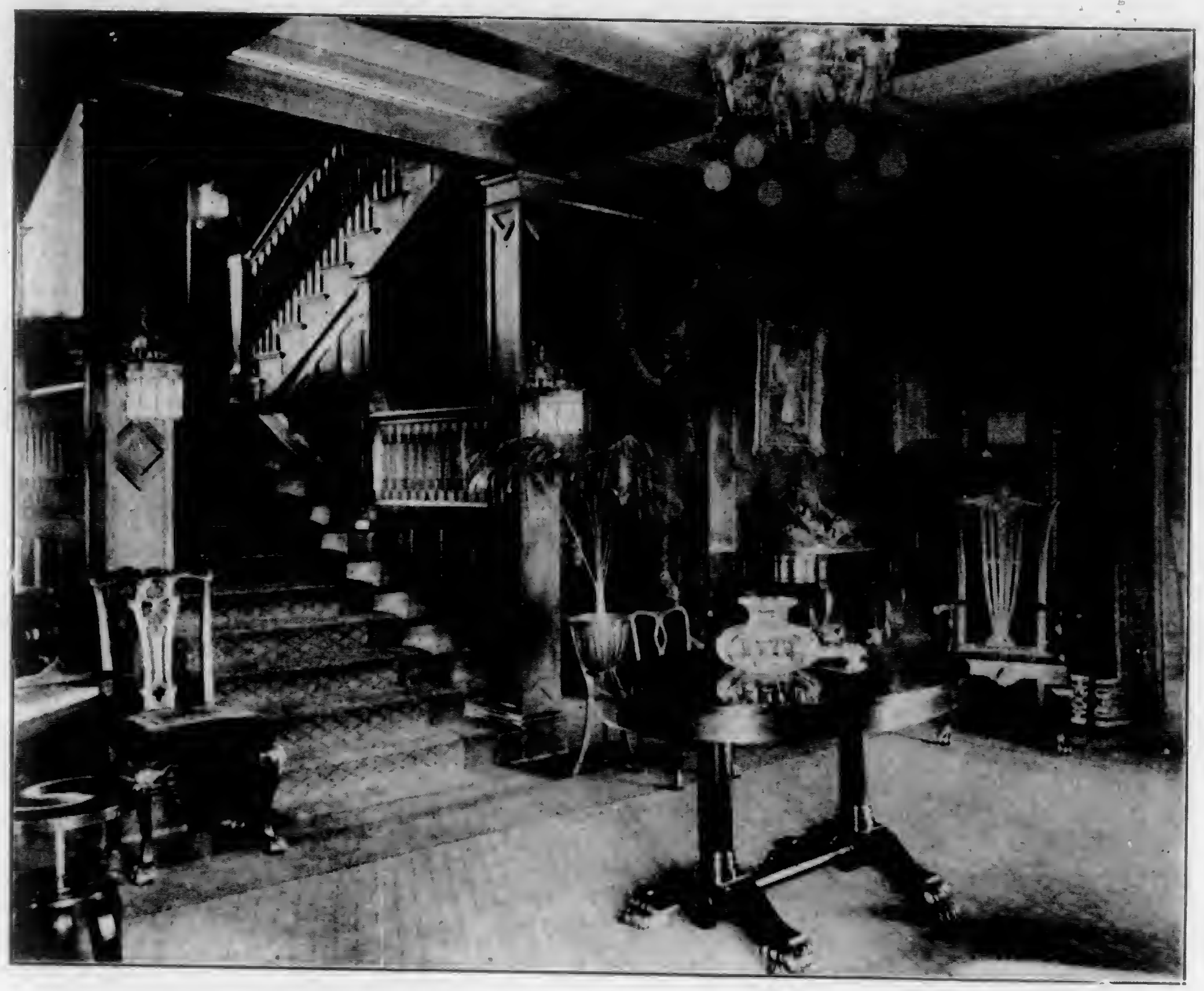
WALL decorations, according to a prominent club woman, have a large and far-reaching effect upon a person's life. "The color of our walls," she says, "has its influence upon us. The design of the wall paper can help attune us to the lofty harmonies of life, or subtly irritate and debase us, and so for their influence upon our lives our homes should be restful and sincere. In a house where there are so many rooms that some of them are entered only three or four times a year, the fancy of fitting them up with old-fashioned Louis XV styles, for instance, may pass. But to live constantly in such a room is a different thing. It is a sort of masquerade, which, in the long run, can do us no good in any respect. On the contrary, it must have an unfavorable effect on the man who adopts it. Such a fashion is in contradiction to the age we live in, and will only confirm people in the empty and hollow way of thinking and feeling wherein it originates. It is well enough to go to a masquerade as a Turk, but what should we think of a person who wore such a mask all the year around?"



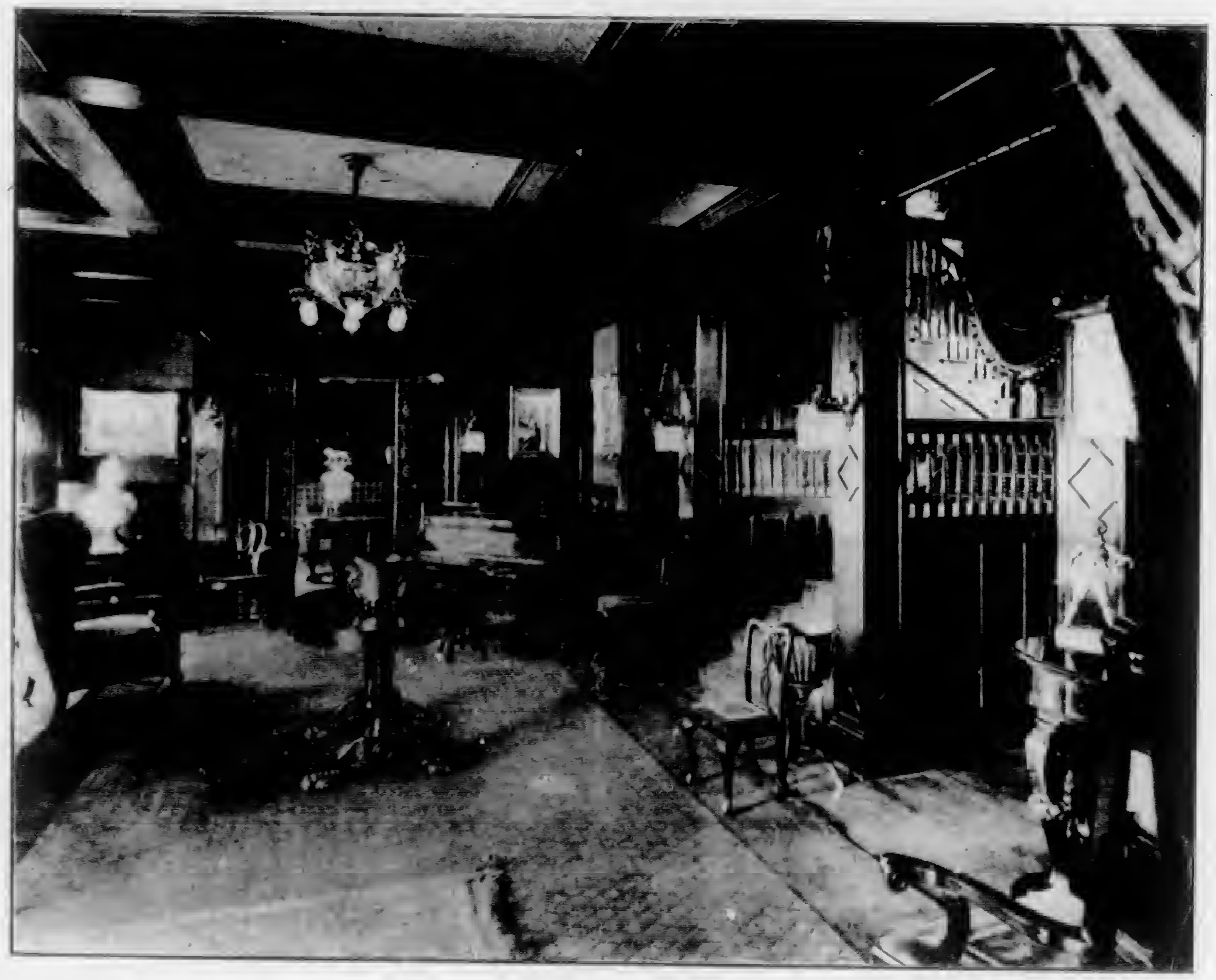
Grotto in the Garden of Mr. Robert Marsh, Los Angeles
A. F. Rosenheim, Architect



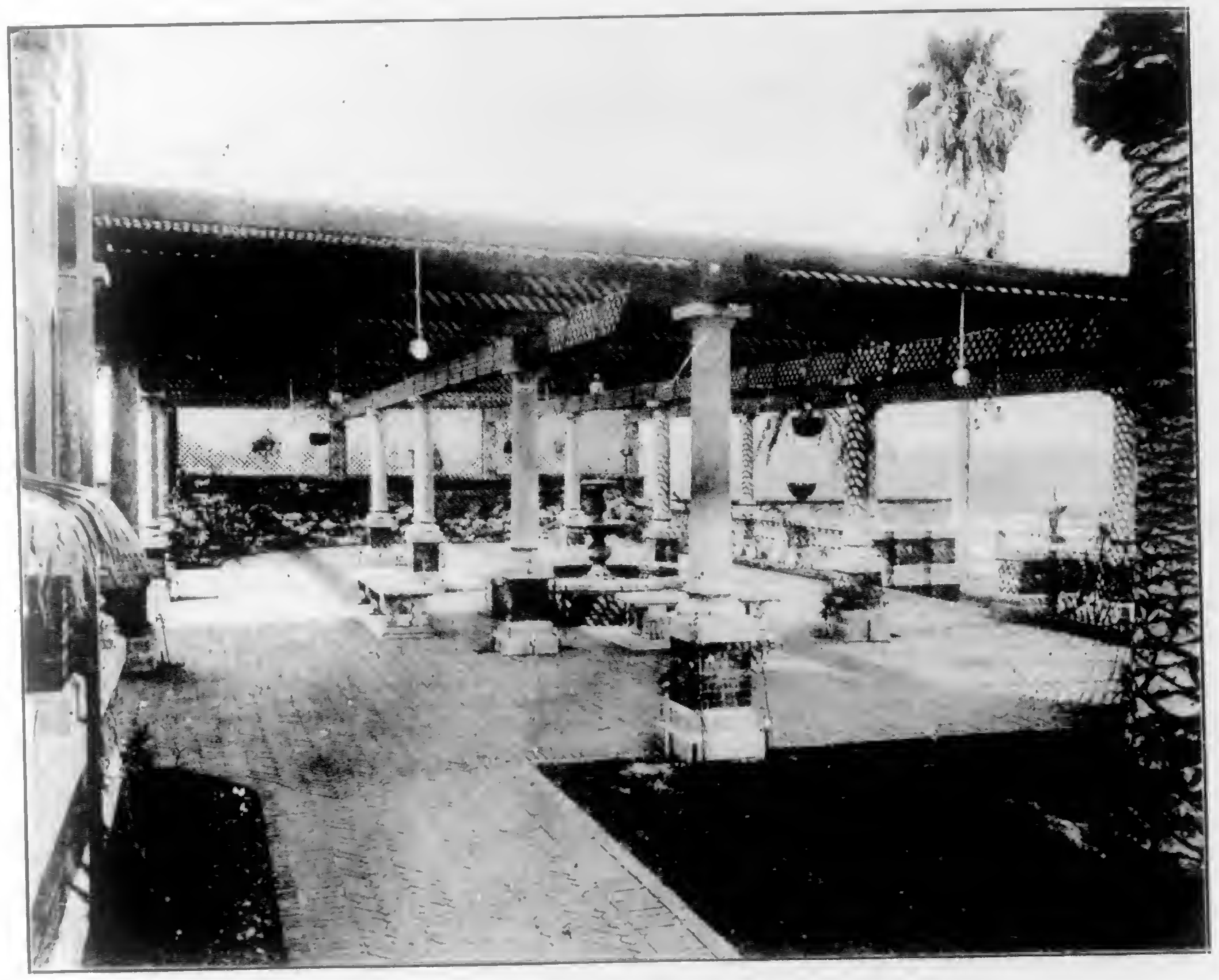
Pergola in Garden of Mr. Robert Marsh, Los Angeles



Hall in the Residence of Mr. Robert Marsh, Los Angeles



Hall, looking towards the Library in the Residence of Mr. Robert Marsh, Los Angeles



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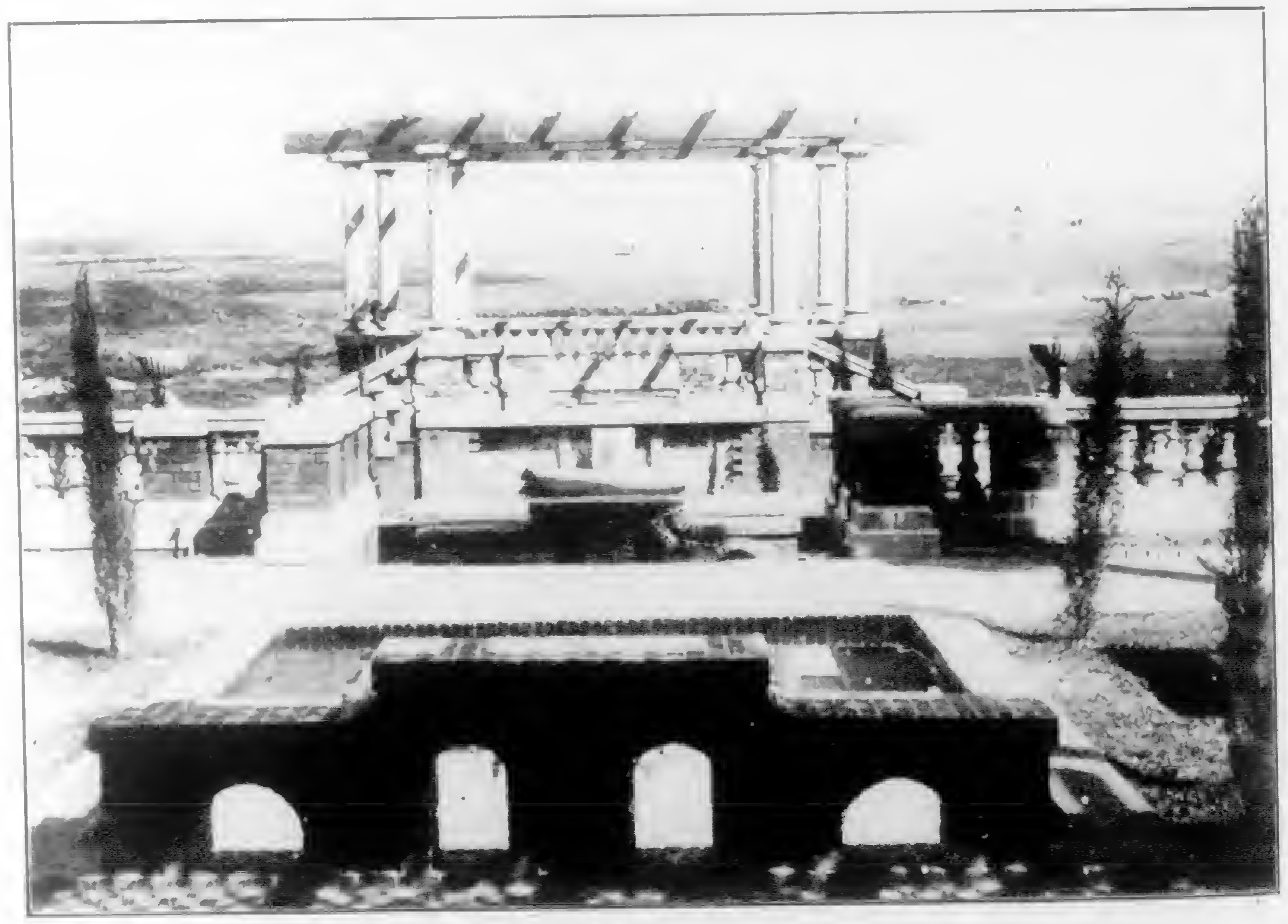

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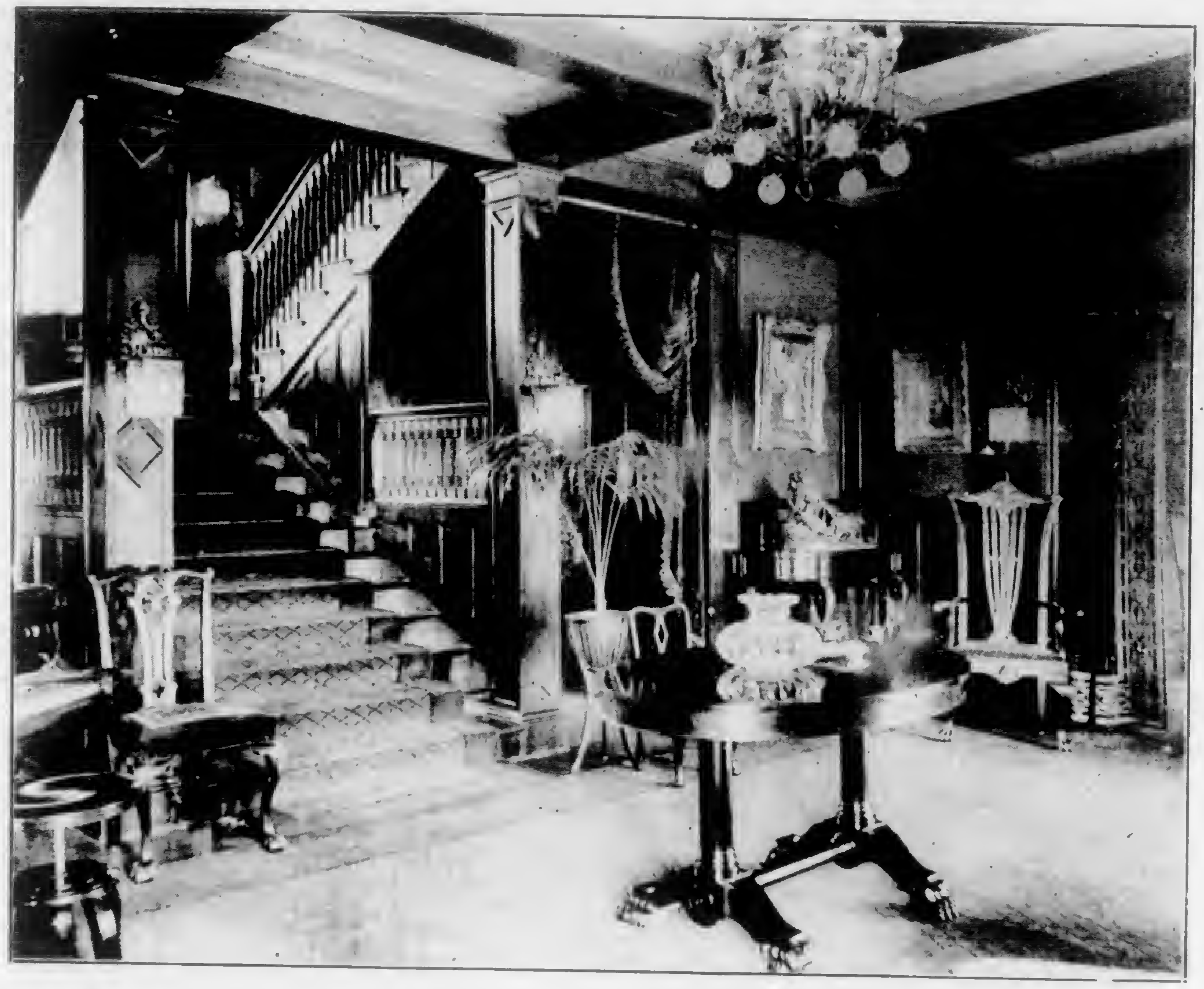

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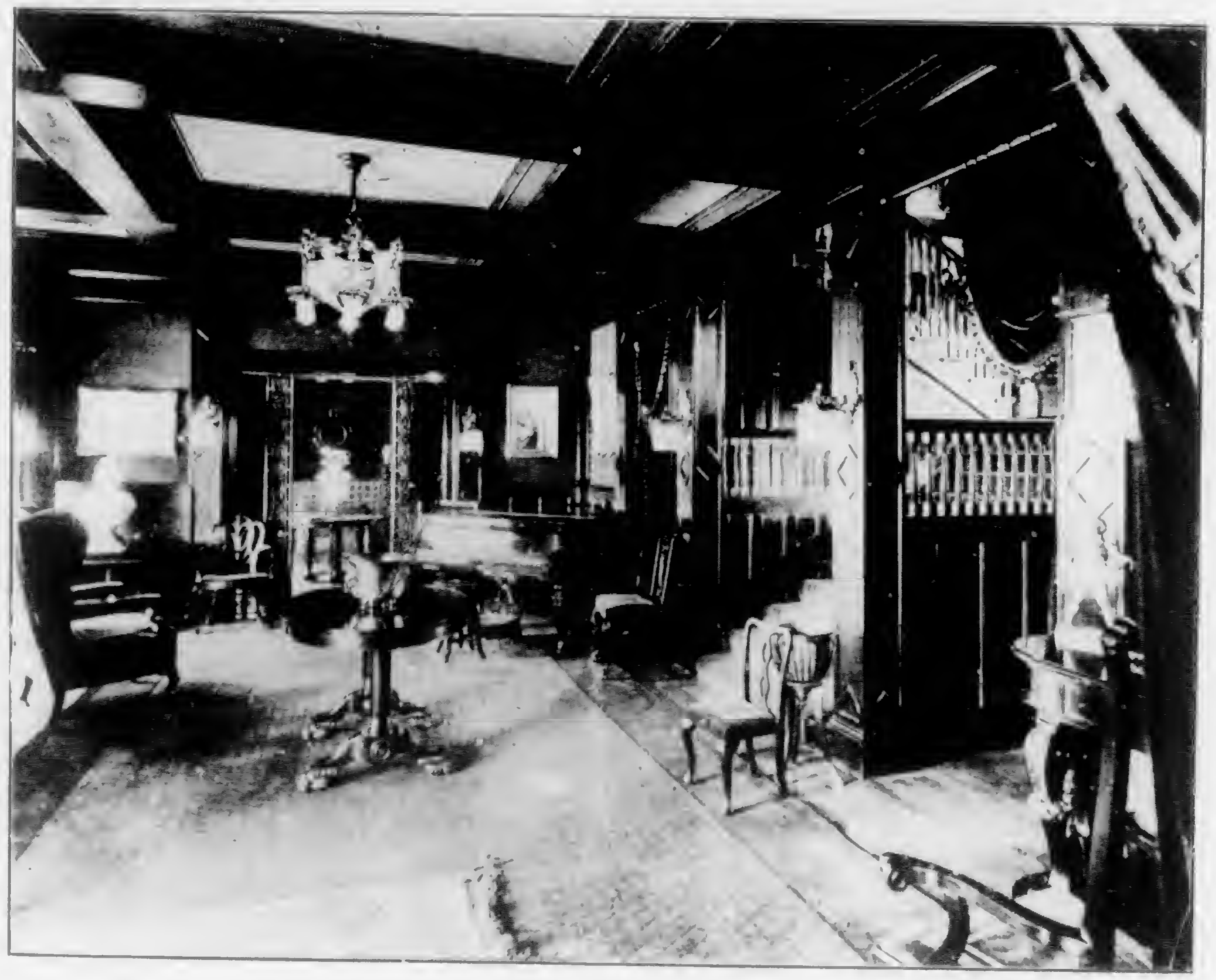

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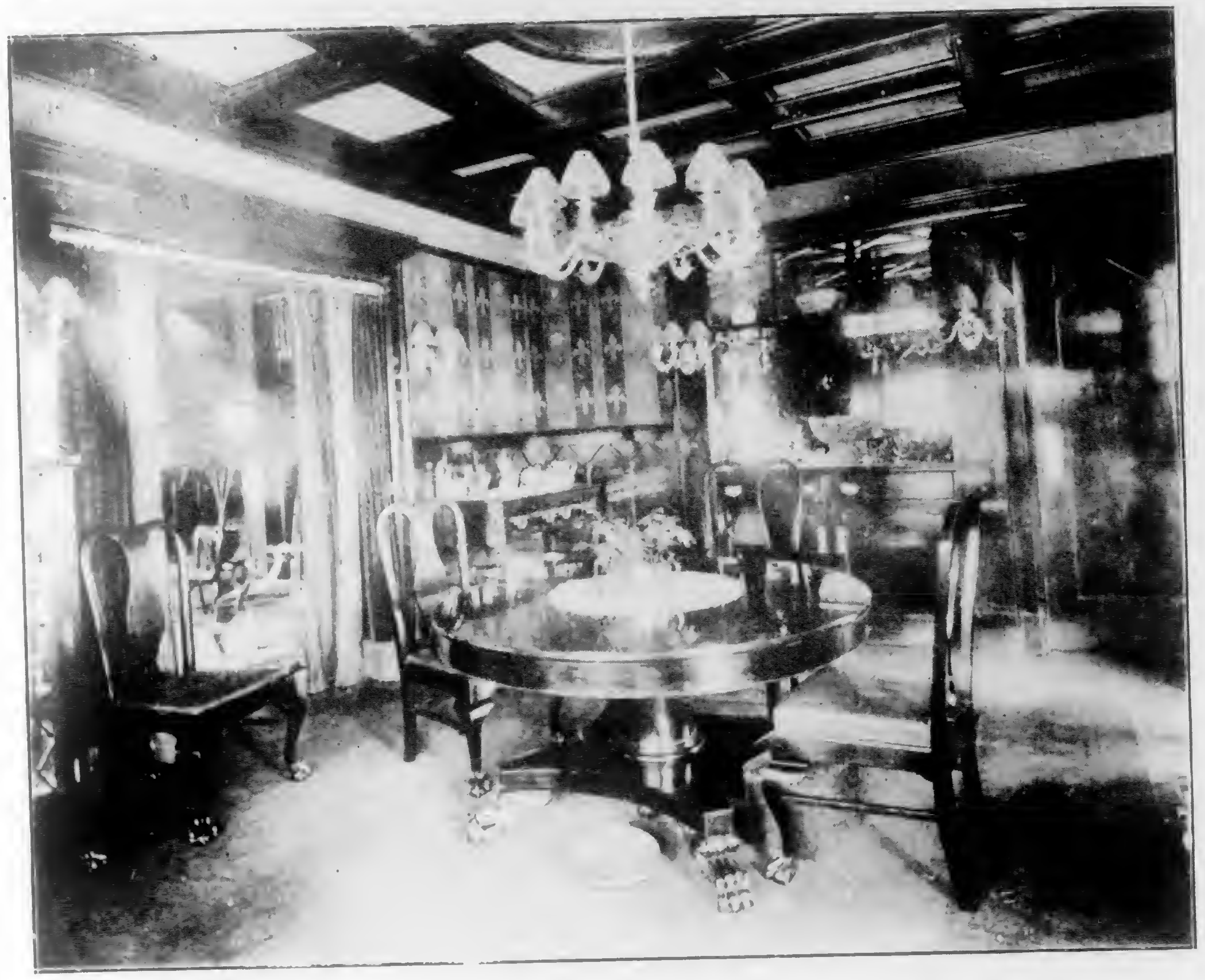
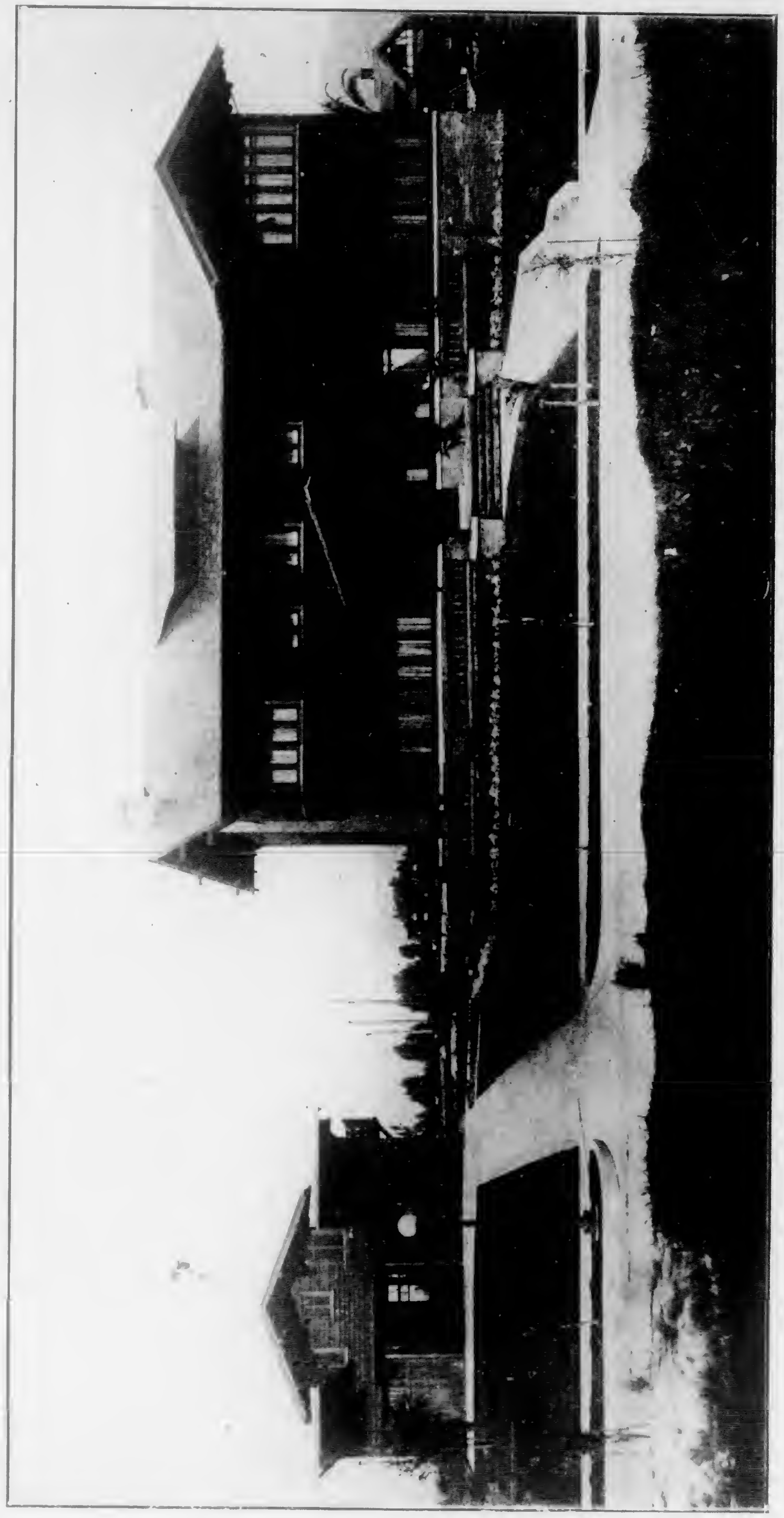


Dining-Room in the Residence of Mr. Robert Marsh, Los Angeles

Outlook for Cement Industry

THE Portland cement manufacturers look upon the coming season as demanding practically 50,000,000 barrels of their output, and up to the present time they have never neglected a command of this kind. Even at this early date it can be confidently said that the cement manufacturer will take care of his corner of responsibilities of 1907, no matter what else may happen. There is no excitement, but calmly and deliberately they proceed to prepare for the rush by putting in extra kilns to increase their capacity, providing superior quarrying arrangements and all the minutae of such an enormous undertaking that is required to handle such a large quantity of heavy materials, and the purchaser and consumer only knows that when he asks for the product that the goods are ready for delivery. Their perfect organization and up-to-date methods are really a pattern for other industries to emulate. With becoming conservatism for those engaged in such an important industry it is practically certain that no great fluctuation in the price of this indispensable commodity will be noted in 1907 to discommode the steady progress of the season's operations. It is just as safe to say that cement will not go out of sight or, rather, out of reach, as it is to say that the product will not be over-manufactured to any large extent, and thereby bring a slump in the midst of a busy season. There is probably more intelligence and consequently more foreknowledge and preparedness attributable to the manufacturers of Portland cement than in any other line.—Rock Products.



Residence and Garage of Mr. John Howze, Los Angeles
A. F. Rosenheim, Architect

Dining Room in the Residence of Mr. Robert Marsh, Los Angeles

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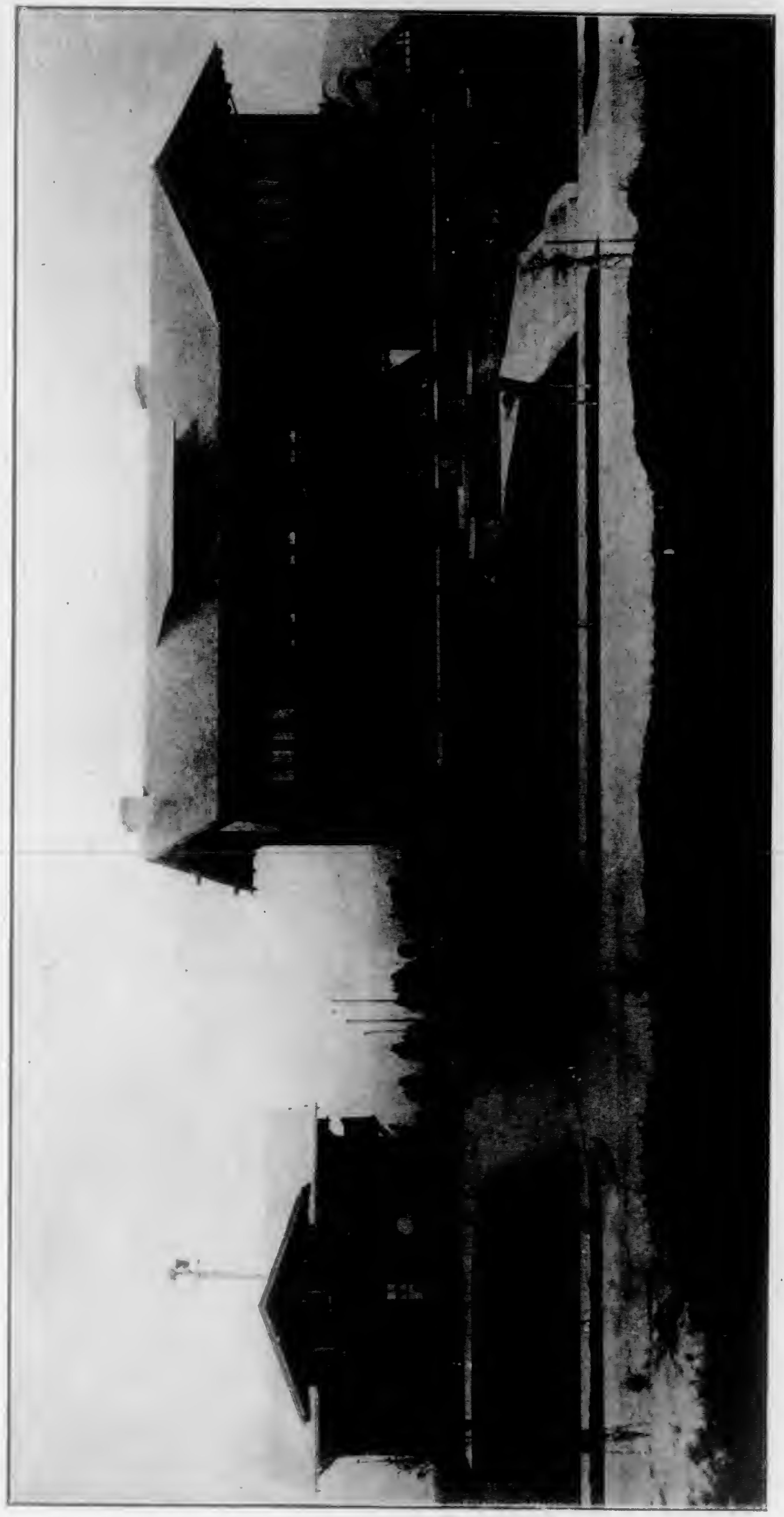

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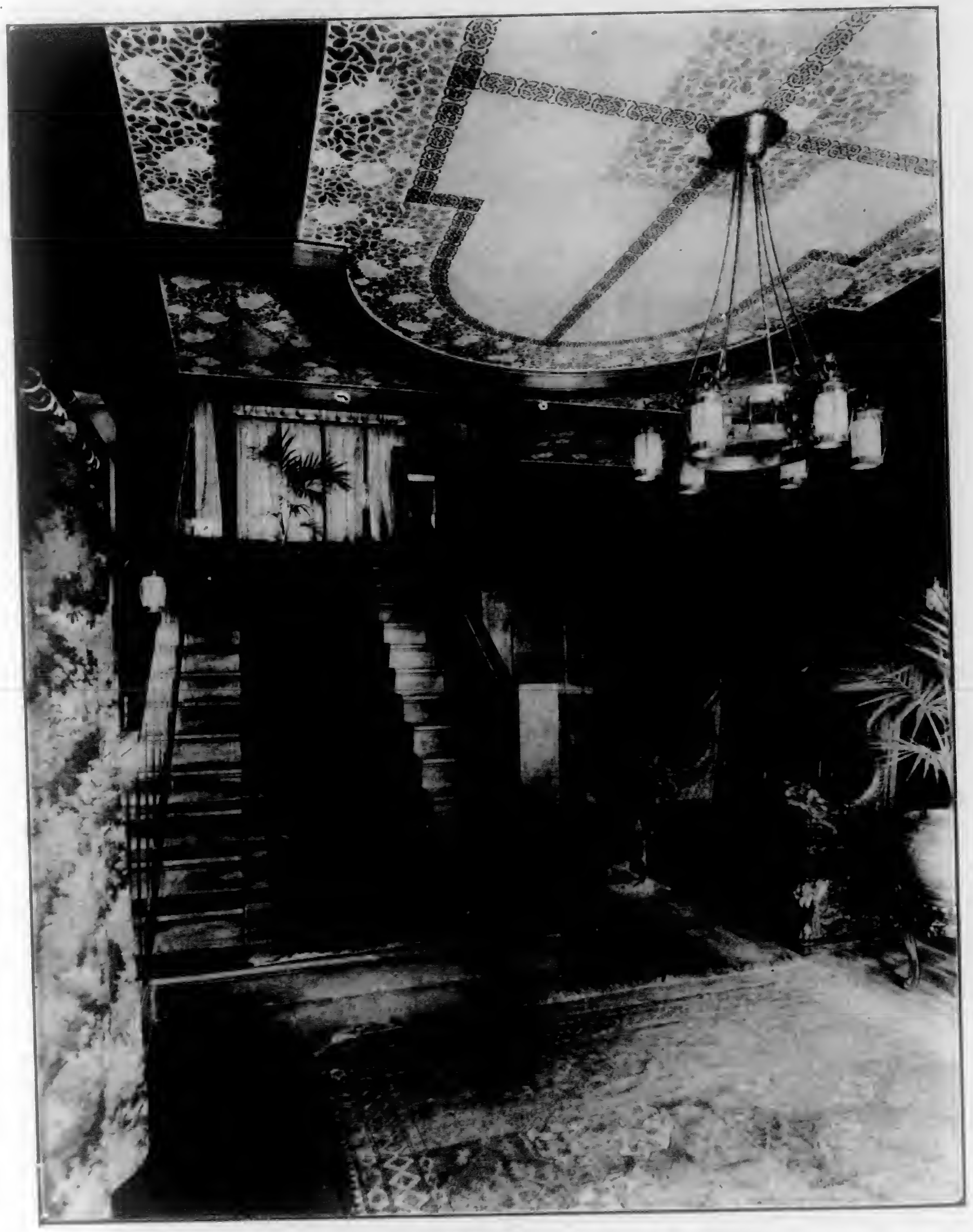
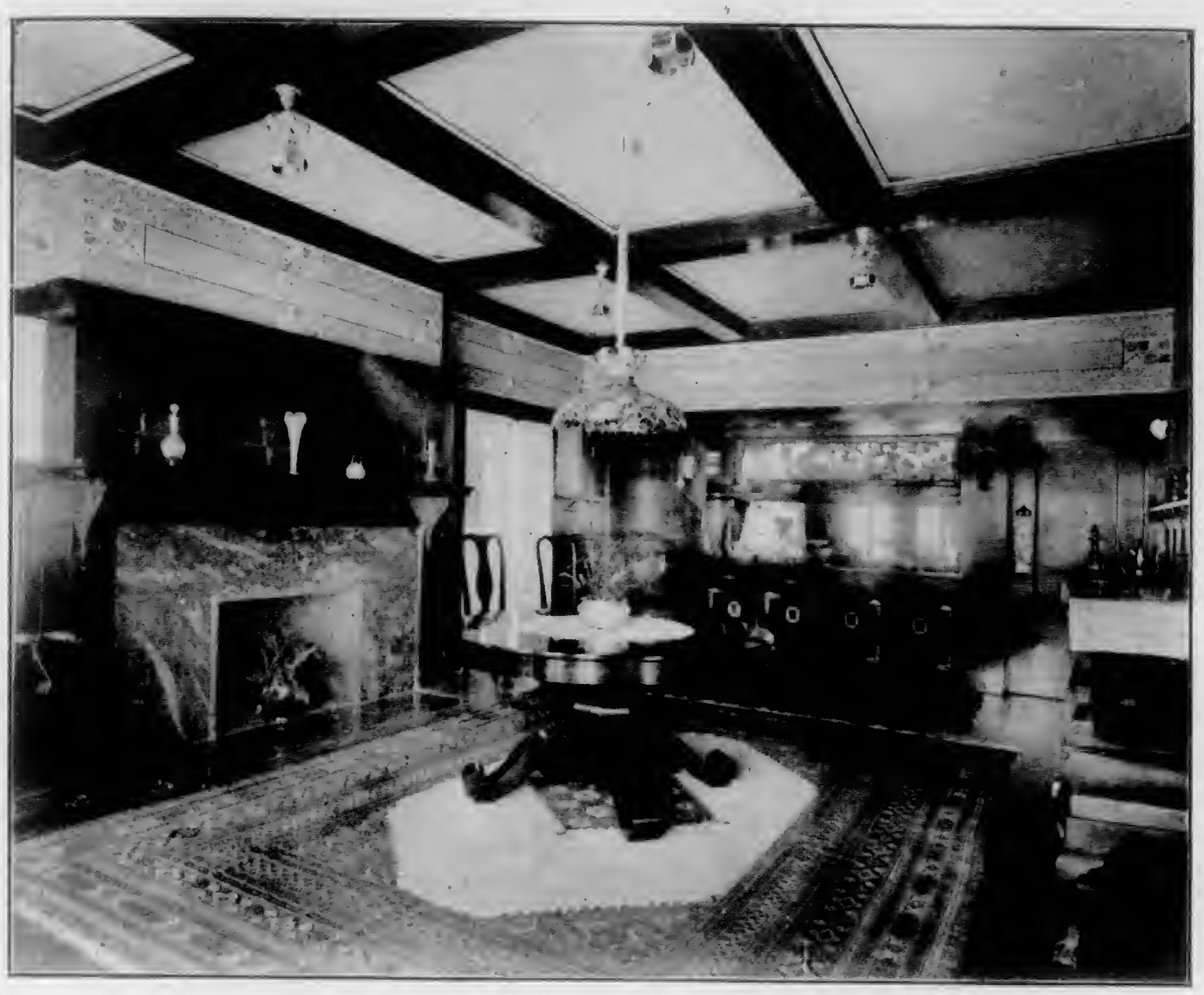


Entrance Hall in Residence of Mr. John Howze, Los Angeles



Dining Room in the Residence of Mr. John Howze, Los Angeles

San Francisco Chapter, A. I. A.

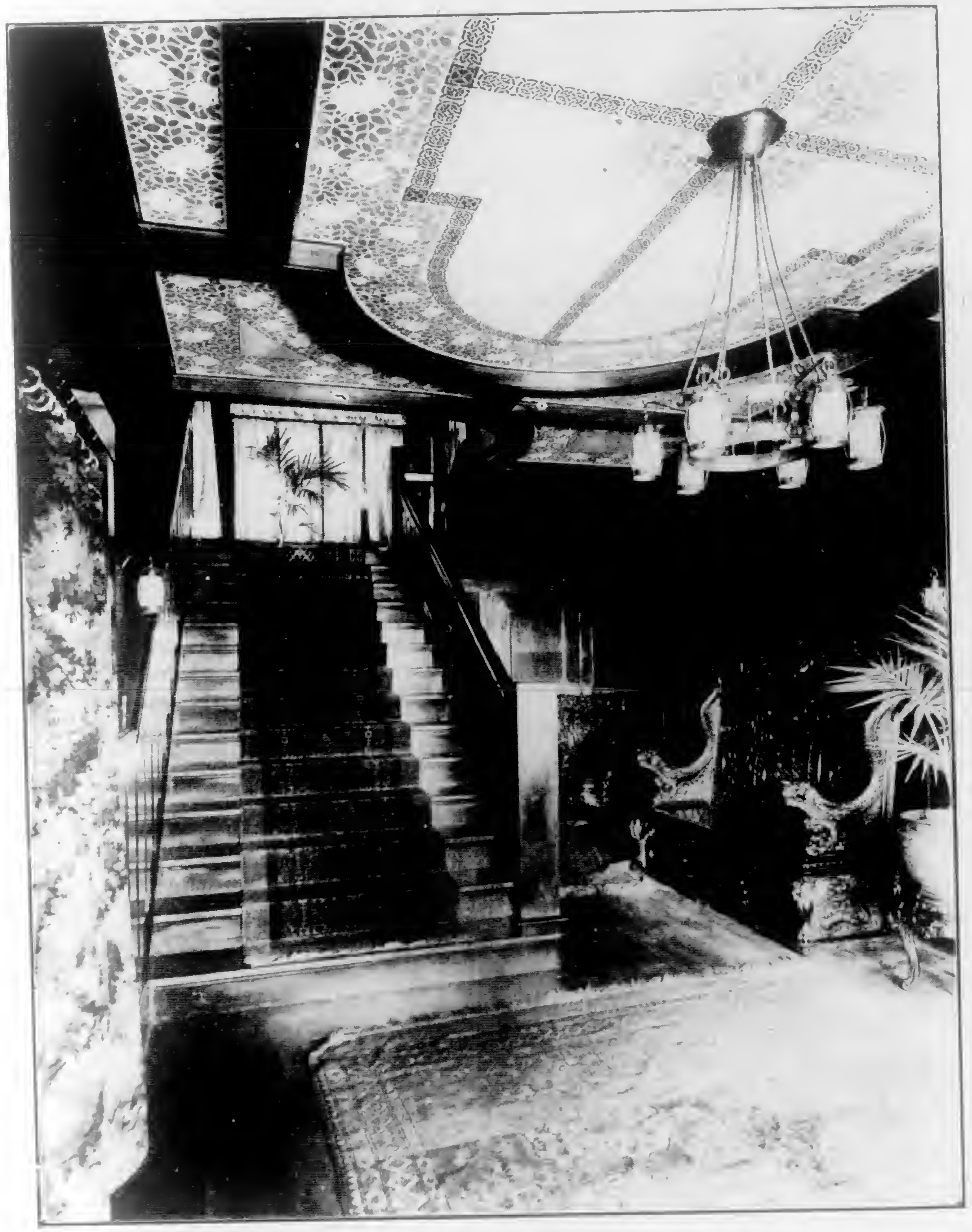
THE San Francisco Chapter, American Institute of Architects, met at Tait's on Tuesday evening, February 19th, for the purpose of electing officers for the ensuing year and the transaction of business. The meeting was preceded by a well-attended dinner and an informal discussion of matters of interest to the profession and the growth and beautification of the city.

The following were elected to serve the Chapter as officers for the current year: President, Albert Pissis; Vice-president, William Mooser; Secretary, Sylvain Schnaittacher; Trustees, Henry A. Schulze, William Curlett.

A vote of thanks was tendered the retiring president and secretary, Messrs. Schulze and Curlett, for their services to the Chapter during their term.

Owing to the success of the evening, it was decided that the monthly meeting of the Chapter be held the third Thursday of each month and that each meeting be the occasion of a similar dinner.

Among those present were: Herman Barth, Frederick D. Boese, B. J. S. Cahill, William Curlett, Clinton Day, Lionel Deane, Chas. W. Dickey, H. Geilfuss, William Mooser, Matt O'Brien, D. F. Oliver, Albert Pissis, James Reid, P. Righetti, Sylvain Schnaittacher, Henry A. Schulze, C. Werner, E. J. Vogel, T. J. Welsh, and G. A. Wright.



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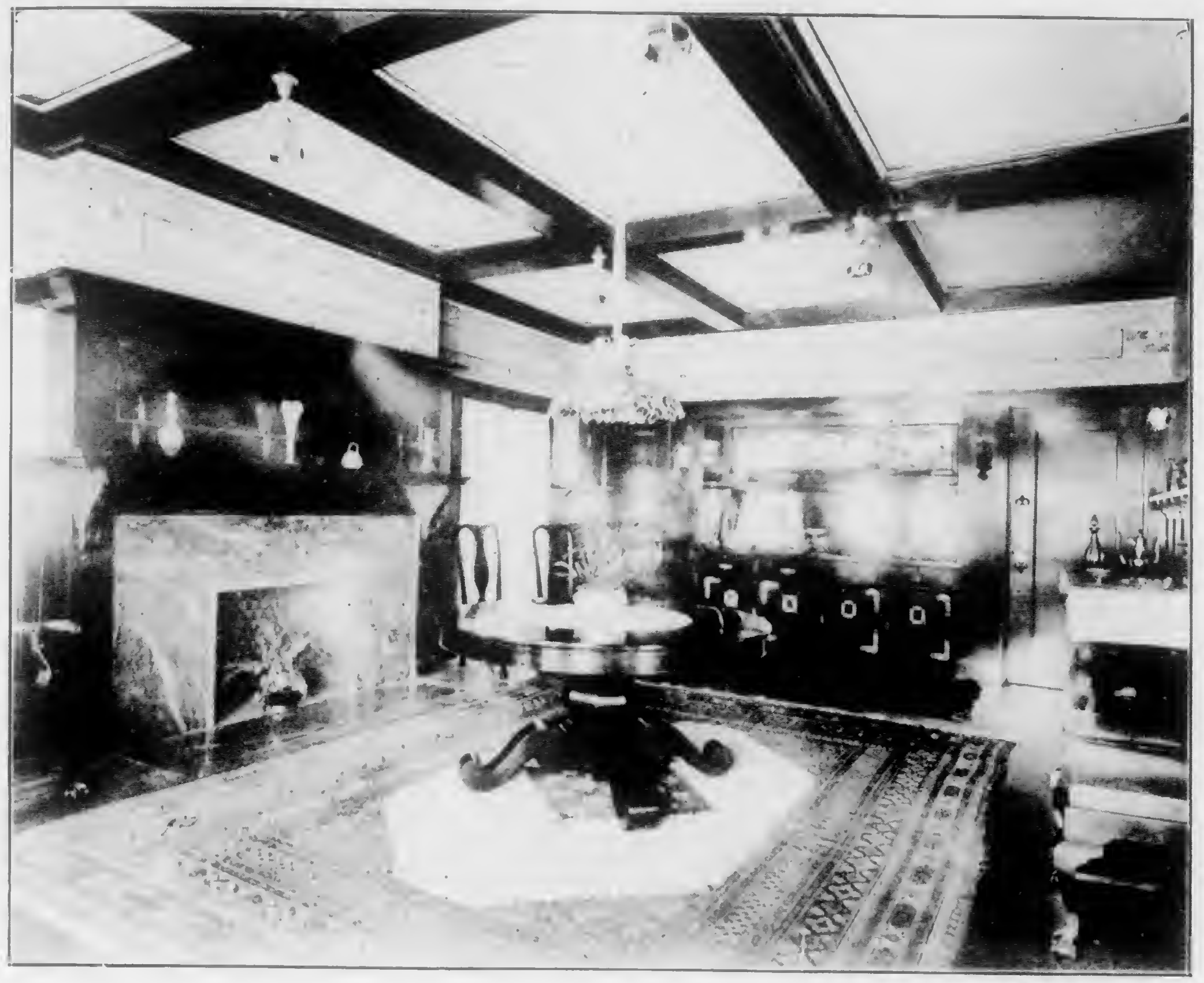

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Forms for Concrete Construction*

By SANFORD E. THOMPSON, Consulting Engineer

RECENT failures in reinforced concrete construction cannot be cast one side and forgotten with the passing comment so frequently heard that the accident was due merely to poor construction or too early removal of forms. The reasons for every failure should be thoroughly investigated by experts to prevent recurrence of similar accidents.

"Forms," although frequently guilty, are by no means the only culprits. In fact, they are frequently blamed when the designer is at fault. Just so long as men who know nothing of the first principles of mechanics are permitted to design concrete structures, and just so long as irresponsible contractors are engaged to erect them, the list of accidents will increase in startling numbers. In every case it is the men, not the inanimate lumber and materials, who are to blame. However, granting its danger under ignorant hands, reinforced concrete as a whole must not be condemned for failures due to improper conditions any more than brick should be rejected as a building material for apartment houses because of the collapse of several unfinished buildings in New York City two years ago through disregard of frost action upon the mortar.

Failures in concrete buildings may be attributed to:

1. Imperfect design; especially through neglect of essential details in locating the reinforcing metal and through the adoption of too low a factor of safety.
2. Poor materials; such as cement which does not properly set up, or sand which is too fine or which has an excess of clay, loam or other impurities.
3. Faulty construction; from improper proportioning, mixing or placing, or too early removal of forms.
4. Weak form.

A disregard of such important principals is frequently criminal negligence, and yet in at least one case under my observation an examination of the structure and the materials, after a collapse in which a number of lives were lost, showed both the design, materials and construction so faulty that it was impossible to decide positively which of the four causes named above was the primary reason for the failure.

In this paper it is proposed to treat only of the design, construction and removal of forms.

KIND OF LUMBER

The selection of the lumber must be governed by the character of the work and the local market. Although white pine is best for fine face work, and quite essential for ornamental construction cast in wooden forms; for ordinary work, however, even for the panels, white pine is apt to be too expensive, and spruce, fir, Norway pine or the softer qualities of Southern pine, especially North Carolina pine, must be substituted for it. Some of these woods are more liable to warp than white pine, but they are generally stiffer and thus better adapted for struts and braces.

Kiln dried lumber is not suitable for form construction because of its tendency to swell when the wet concrete touches it. Very green lumber, on the other hand, especially Southern pine, which does not close up quickly when wet, may give trouble by joints opening. Therefore, the middle ground, or, in other words, partially dry stuff, is usually best.

FINISH AND THICKNESS OF LUMBER

Either tongued and grooved or bevel edged stuff will give good results for floor and wall panel forms, and is preferable to square edged stuff. A smoother surface may be attained at first with the tongued and grooved stock, and there is less trouble with opening joints, but it is more expensive than bevel edge because of the waste in dressing, and if the forms are used many times there is greater tendency to wear at the joints. Even for rough forms plank planed one side may be economical to cheapen the cost of cleaning. Studs should always be planed one side to bring to size.

The thickness of lumber varies with different contractors, some using 1-in., others 1½-in., while a few employ 2-in. stuff even for panels. (These are commercial thicknesses measured before planing.) For ordinary walls 1½-in. stuff is good, although for heavy construction where derricks are used 2-in. is preferable. For floor panels 1-in. boards are most common, although if the building is eight stories high or over, 1-in. stuff is likely to be pretty well worn out before the top of the building is reached, and the under surface of the concrete may show the wear badly. For sides of girders either 1 or 1½ in. is sufficient, while 2-in. is preferable for the bottom of girders. Column forms are generally made of 2-in. plank.

Certain general rules are applicable to all kinds of forms. Strength, simplicity and symmetry are three fundamental principles of design. The necessity for strength is obvious, while economy in concrete construction consists in quickly erecting and moving the forms and in using them over and over again.

The design of the concrete members should recognize the forms. A slight excess of concrete sometimes may be contributed to save carpenter work. Frequently beams may be designed of such widths as to use dimension widths of lumber without splitting.

Columns may be of dimensions to avoid frequent remaking. Panel recesses in walls may be made the thickness of a board or a plank. To permit ready cleaning of dirt and chips from the column forms before laying the concrete at least one prominent contractor provides a door at the bottom of each of them.

DESIGN OF FORMS

In building construction the forms must be designed so that the column molds and also the bottom of beam molds are all independent of the slabs. The forms may thus be left a longer time upon members subjected to the greater stress.

The sides of the beam molds should be held tightly together by wedges or clamps to prevent the pressure of the concrete springing them away from the bottom boards. At top or bottom of each strut hardwood wedges are useful when setting and removing it, and also permit testing to make sure that there is no deflection of the beam or slab. For this purpose some contractors loosen the wedges 24 hr. in advance of the struts. In general it is preferable to use comparatively light joists, such as 2 x 8 in. or 2 x 10 in., with frequent shores, rather than to use lumber which is heavier to handle.

If forms are to be used but once or must be taken apart when removed it is sometimes practicable to use only a few partially driven nails, so that they can be withdrawn without injury to the lumber. It is very difficult

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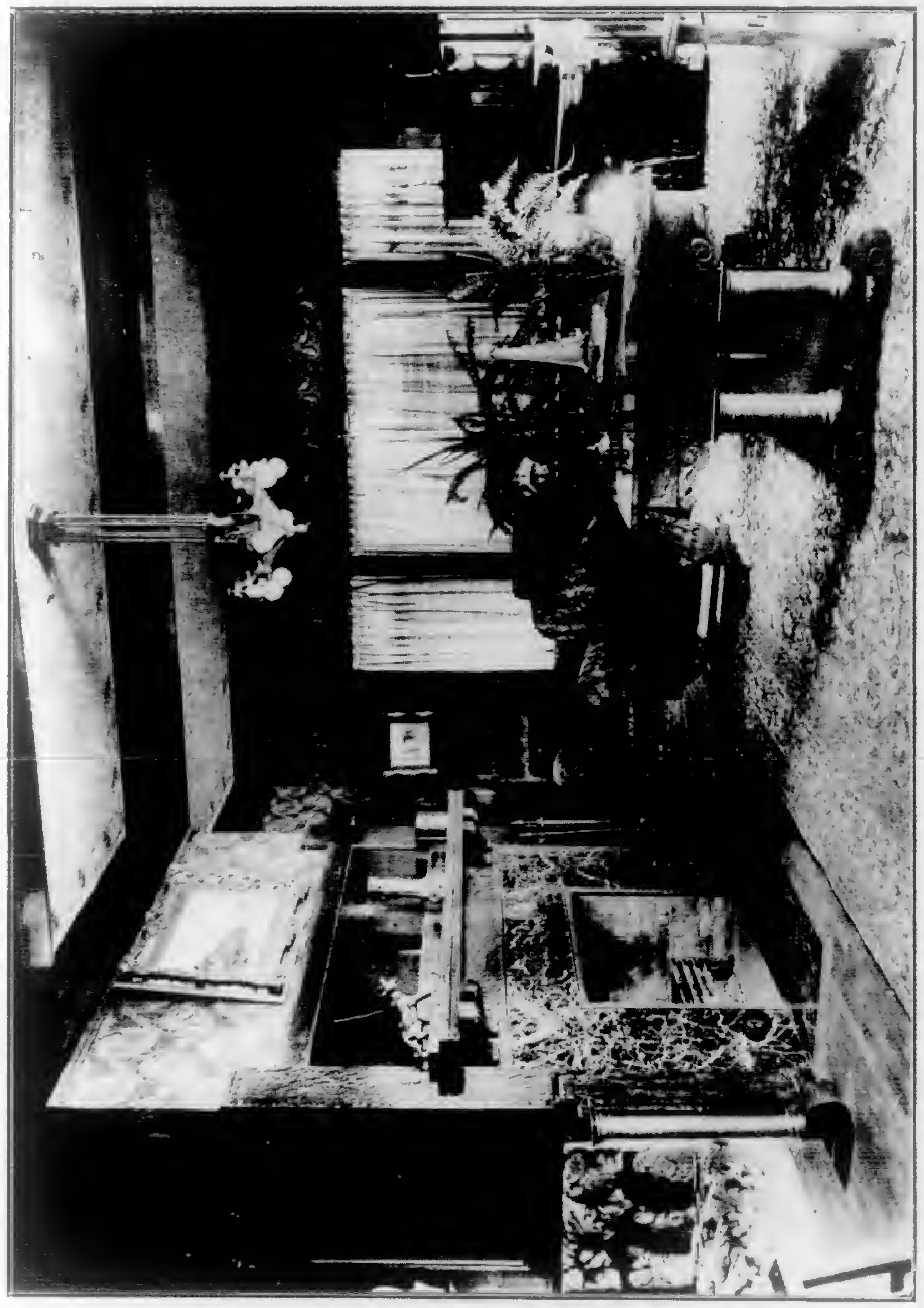
*Paper read at the Chicago Meeting of the National Association of Cement Users.



Living Room in Residence of Mr. John Hoover, Los Angeles

to convince house carpenters that the pressure of the concrete will hold temporary panel boards in place with scarcely any nailing.

Alignment is another item of importance since it is here that a great deal of time may be wasted by inexperienced or incompetent carpenters. Such workmen may err either on the side of poor alignment or more careful alignment than the structure requires. W. J. Douglas* suggests as a general rule the allowance of "3/8 in. departure from established lines on finished work and 2 in. on unfinished work."

In removing forms the green concrete must not be disturbed by prying against it. This seems so obvious as to need no emphasis, but I have known a first-class house carpenter to actually attempt to straighten a wall which was an inch out of line the day after the concrete was laid by prying the forms over. The wall was straightened, but by a different process from that proposed by the carpenter—the concrete was relaid.

Forms for facework should be tightly put together, it being advisable in some cases to close the joints and holes by mortar, putty, plaster of paris, sheathing paper or thin metal. This is not, as is commonly supposed, to prevent loss of strength by the cement which flows out with the water, but rather to prevent the formation of voids or stone pockets in the finished surface.

Crude oil is one of the best materials to prevent adhesion of the concrete to the forms, though linseed oil, soft soap and various other greasy substances are also employed for this purpose. The oil or grease should be thin enough to flow and fill the grain of the wood.

If the forms are to be left until the concrete is hard, there is little danger of the concrete sticking to them if instead of being greased they are wet thoroughly with water before the concrete is laid. In any case, if concrete adheres to the forms it should be thoroughly cleaned off before reseting; even then it is apt to stick again in the same place.

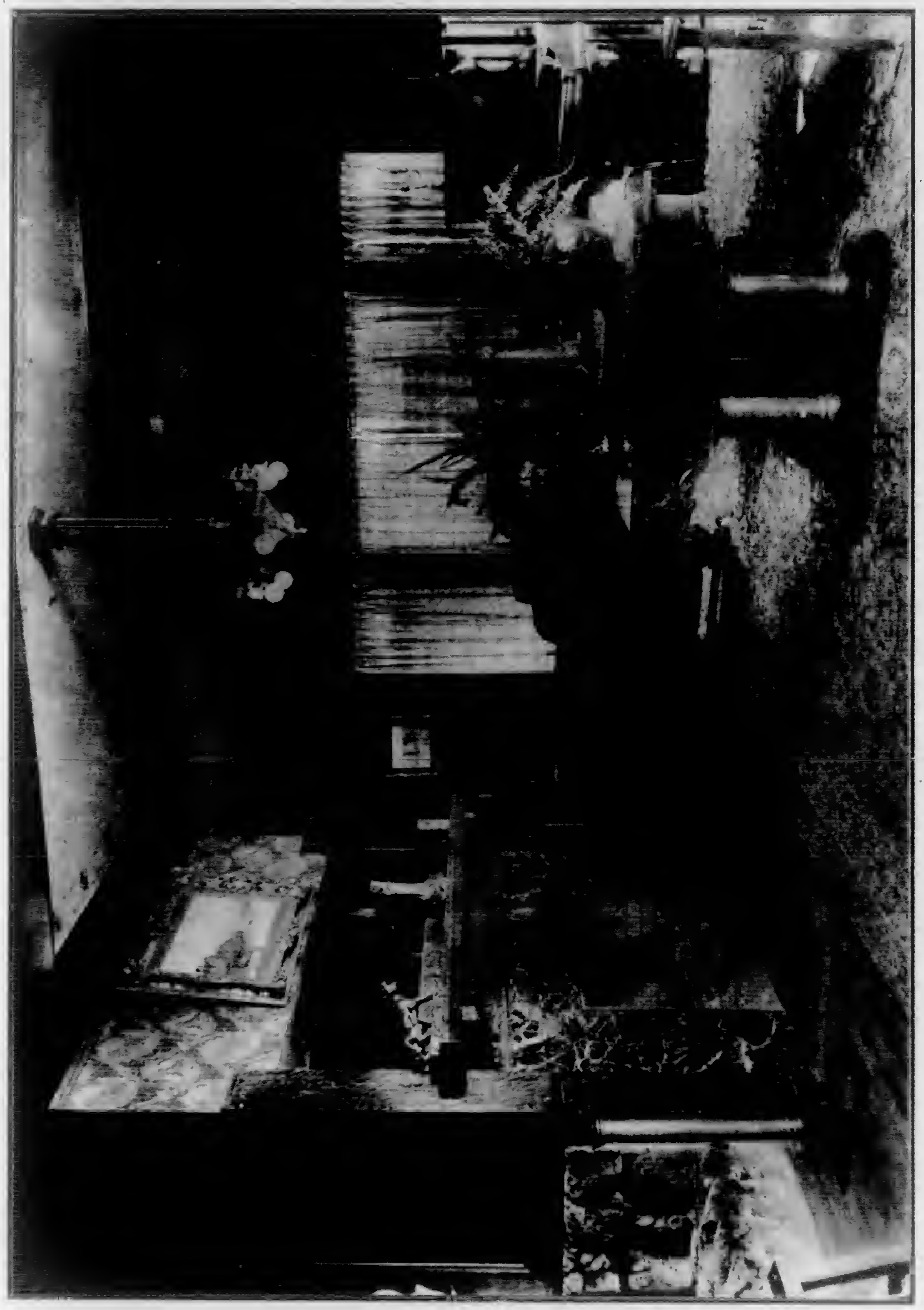
"Rule of thumb" layout of forms in the field is being superseded by design in the drawing room. In building construction where the forms form a large percentage of the cost of the building and where a failure in the forms may cause loss of life, it is especially necessary to treat this question from an engineering standpoint, and many of the best concrete contractors now design their forms as carefully as the dimensions of the concrete members.

If a minimum quantity of lumber is to be used consistent with the deformation allowed, it follows that the dimensions and spacing of the supporting lumber must be actually computed from the weight or the pressure against the sheeting. For columns and for walls where a considerable height of wet concrete is to be placed at once the pressure may be calculated as a liquid. W. J. Douglas** assumes that the concrete is a liquid of half its own weight, or 75 lb. per cubic foot.

In ordinary walls where the concrete is placed in layers computation is not usually necessary, since general experience has shown that maximum spacing for 1-in. boards is 2 ft., for 1½-in. plank is 4 ft., and for 2-in. plank is 5 ft. Studding generally varies from 2 x 4 in. to 4 x 6 in., according to the character of the work and the distance between the horizontal braces or walling.

Floor forms are better based upon an allowable deflection than upon strength, in order to give sufficient stiffness to prevent partial rupture of the concrete or sagging beams.

** Engineering News, December 20, 1906, p. 646.



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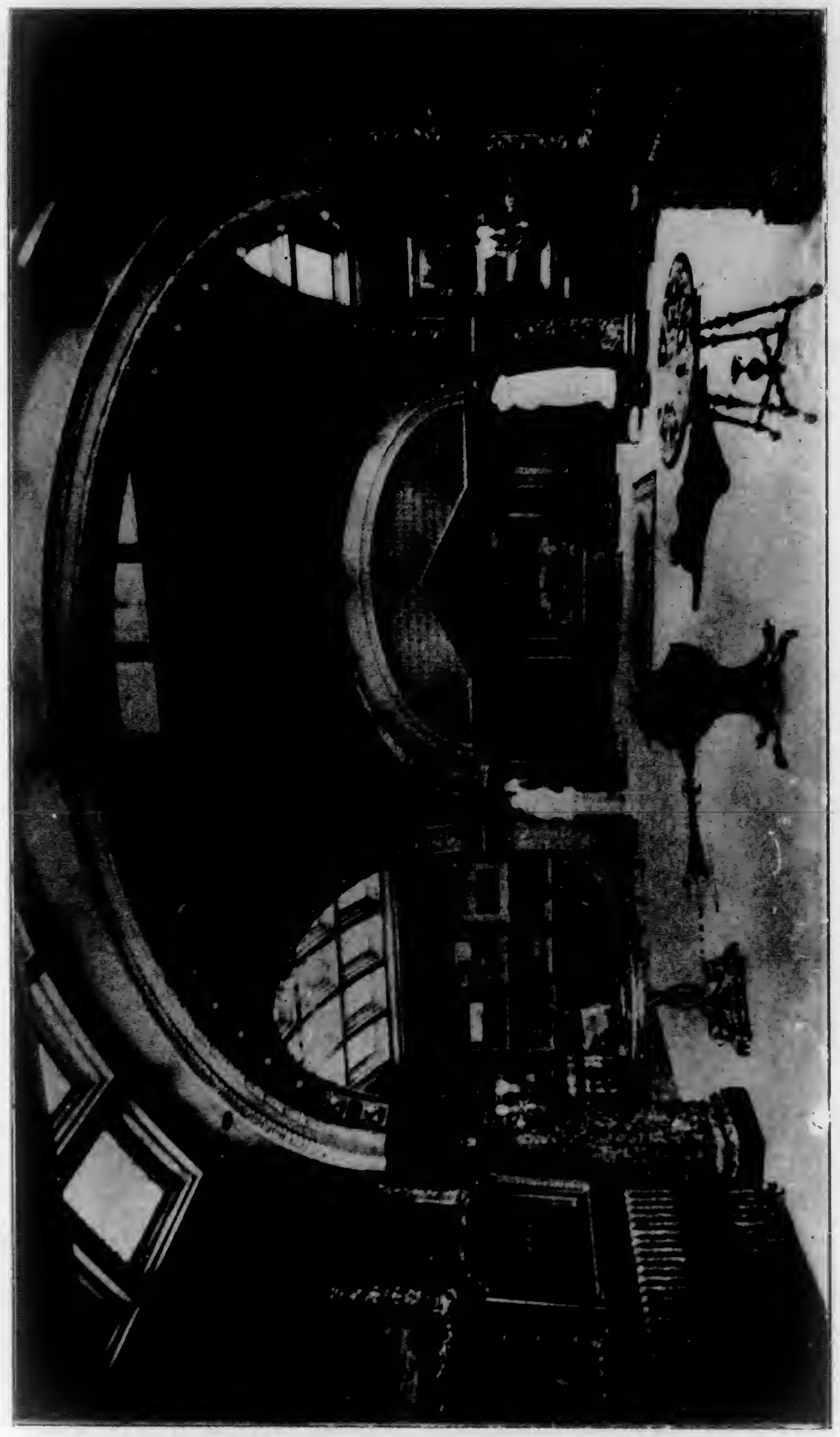

Private Gallery of Mr. John W. Kauffman, St. Louis. Link & Rosenheim, Architects

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Link & Rosenheim, Architects

Colonnade to Private Gallery of Mr. John W. Kauffman, St. Louis
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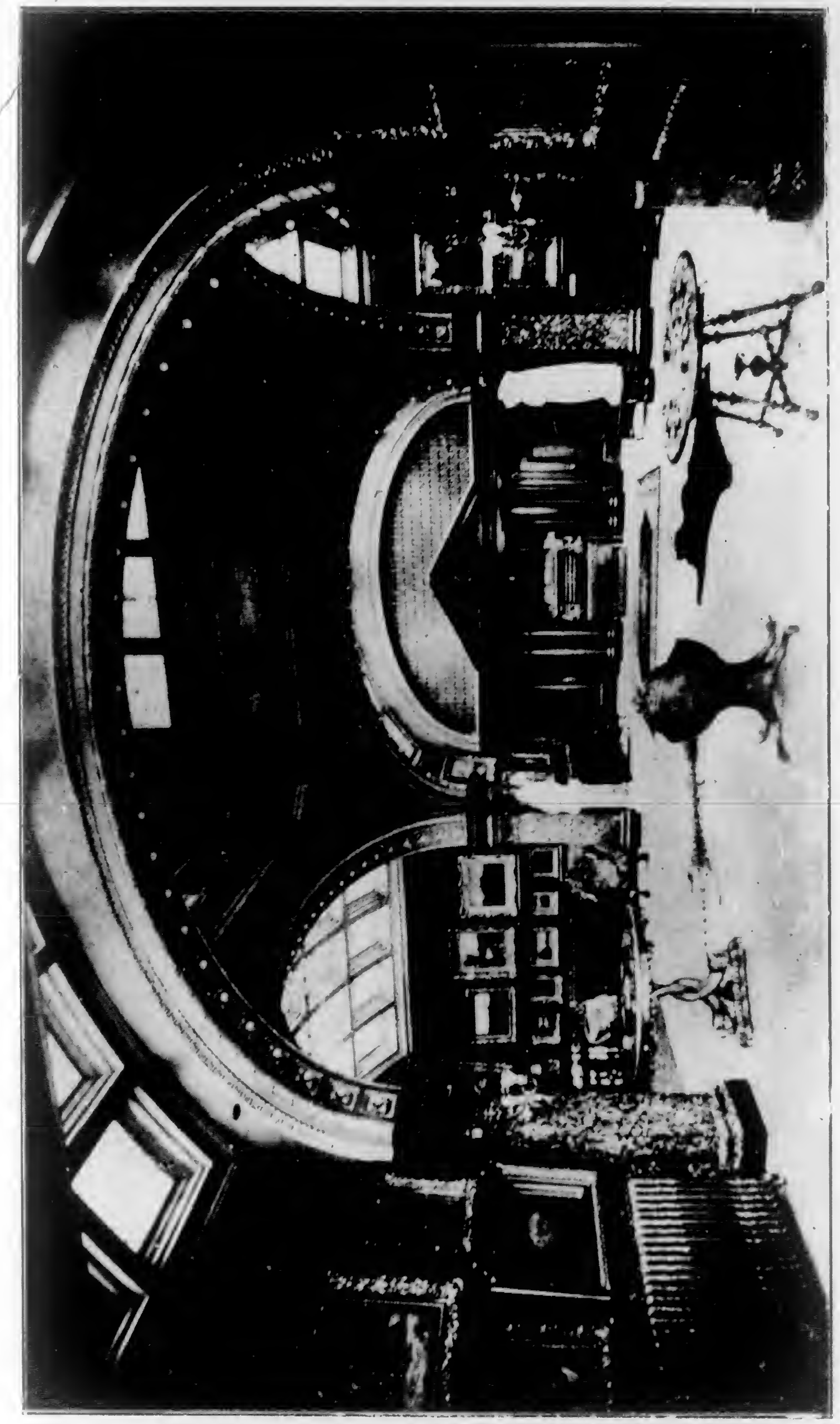
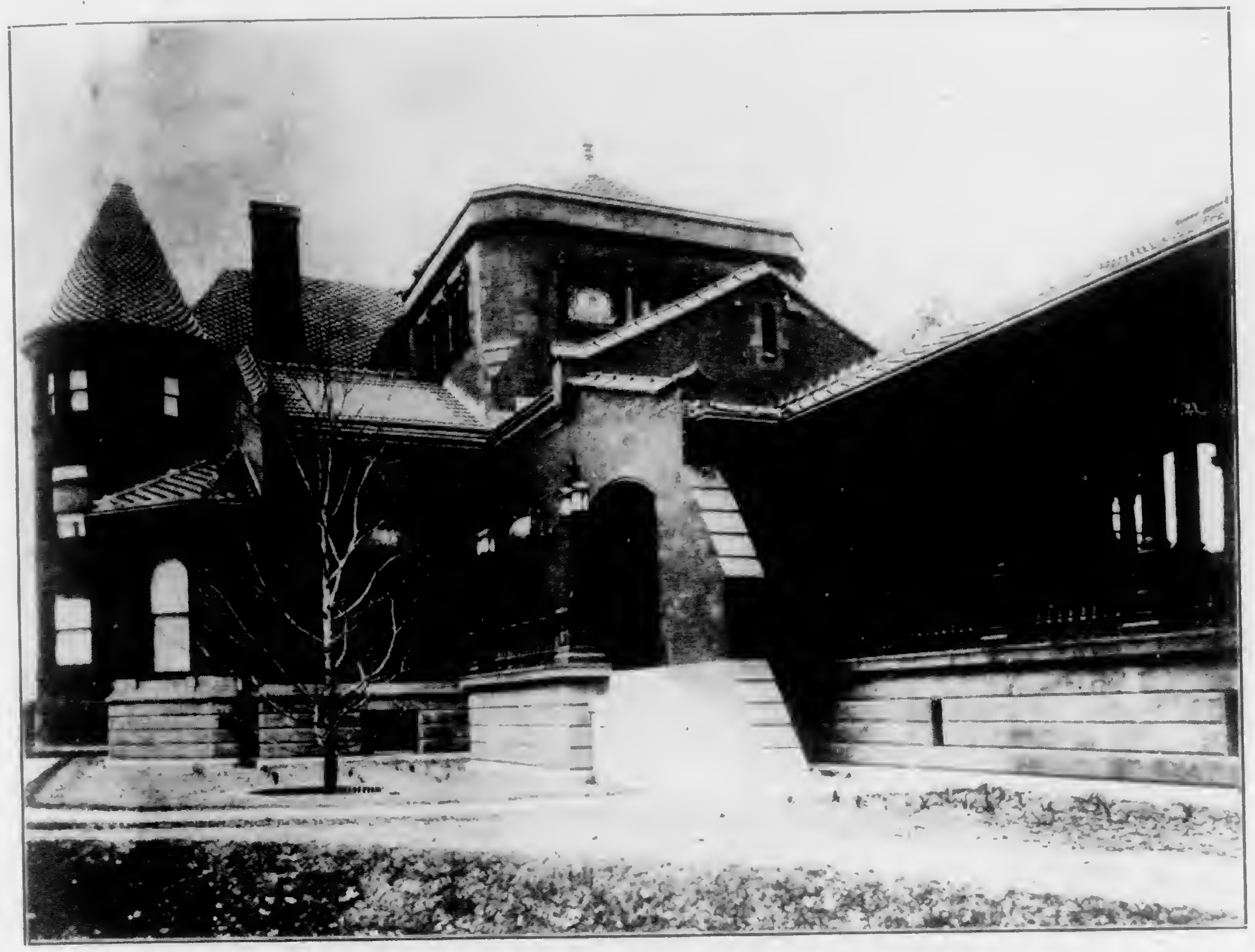


Private Gallery of Mr. John W. Kauffman St. Louis Link & Rosenheim, Architects



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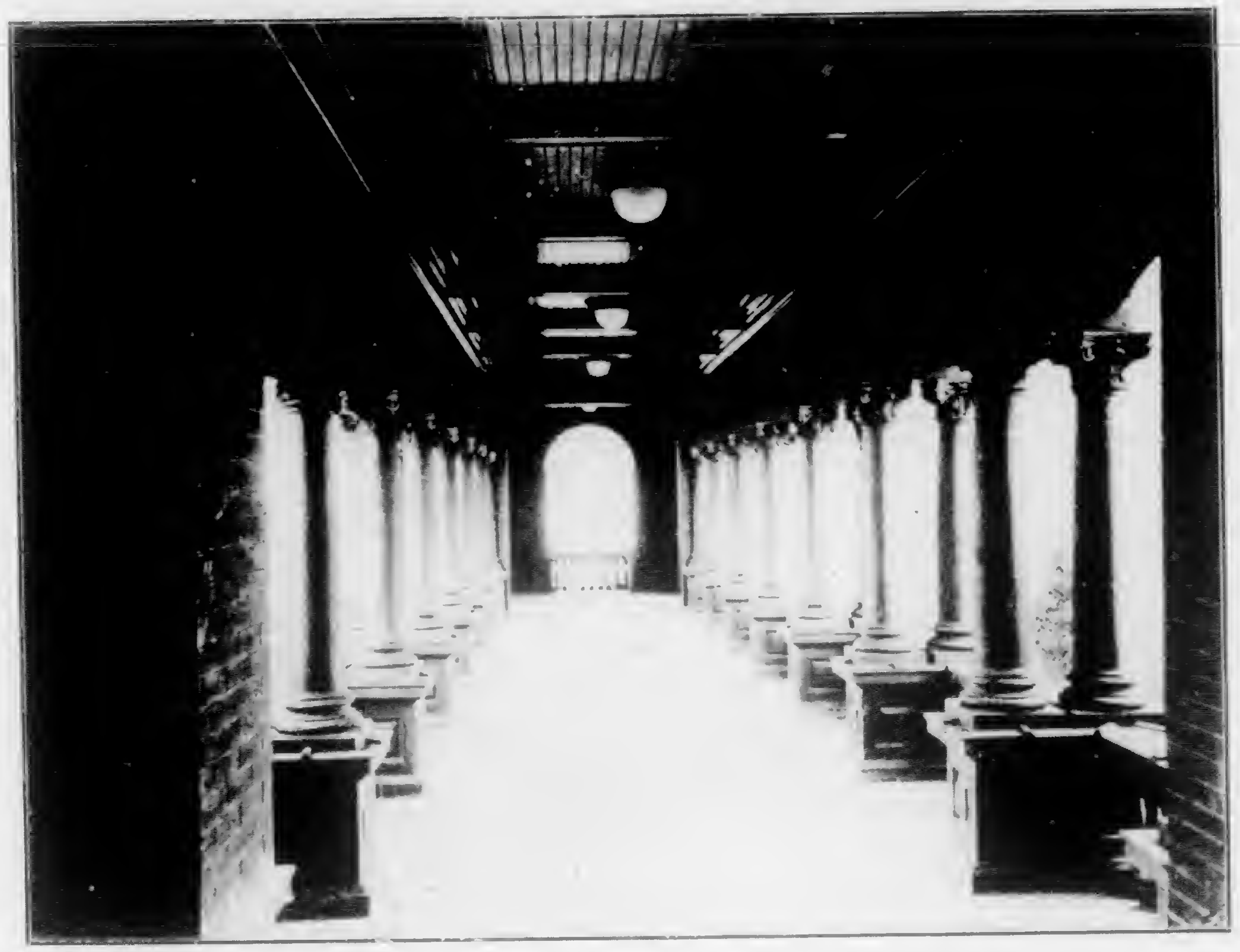

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In calculating, we must add to the weight of the concrete itself, i. e., to the dead load, a construction live load which may be assumed as liable to come upon the concrete while setting. Definite units of stress must also be assumed in the lumber.

I would suggest the following basis for computation, these being values which I have adopted after quite thorough consideration of the matter:

1. Weight of concrete, including reinforcement, 154 lb. per cubic foot.

2. Live load 75 lb, per square foot upon slab; 50 lb. per square foot in figuring beam and girder forms and struts.

3. For allowable compression in struts use 600 to 1200 lb. per square inch, varying with ratio of the size of the strut to its length. If timber beams are calculated for strength use 750 lb. per square inch extreme transverse fiber stress.

4. Compute plank joists and timber beams by the following formula, allowing a maximum deflection of ⅛ in.:

$$d = \frac{3}{384} \; \frac{W l^3}{E I} \qquad (1)$$

$$\text{and } I = \frac{bh^3}{12} \qquad (2)$$

in which

d=Greatest deflection in inches.
W=Total load on plank or joist.
l=Distance between supports in inches.
E=Modulus of elasticity of lumber used.
I=Moment of inertia of cross section of plank or joist.
b=Breadth of lumber.
h=Depth of lumber.

The formula is the ordinary formula for calculating deflection except that the co-efficient is taken as an approximate mean between 1-384 for a beam with fixed ends and 5-384 for a beam with ends simply supported.

For spruce lumber and other woods commonly used in form construction, E may be assumed as 1,300,000 lb. per square inch.

Formula (1) may be solved for I, from which the size of joist required may be readily estimated.

The given weight of concrete per cubic foot is somewhat higher than is frequently used, but is none too much where a dense mixture and an ordinary percentage of steel is used. For very rough calculation, however, it is frequently convenient to remember that 144 lb. per cubic foot is equivalent to the product of the dimensions of a beam in inches times a length of 1 ft.

The suggested live load, 50-75, is assumed to include the weight of men and barrows filled with concrete and structural material which may be piled upon the floor, not including, however, the weight of piles of cement or sand or stone, which should never be allowed upon a floor unless it is supported by concrete sufficiently strong to bear the weight, or by struts under all the floors below.

The units for stress in struts are somewhat higher than in timber construction because the load is a temporary one. The extreme variation given is due to the fact that when a column or strut is longer than about 16 times its smallest width, there is a tendency to bend which must be prevented either by bracing it both ways or allowing a smaller load per square inch. For struts ordinarily used the following stresses may be assumed for different heights:

Safe strength of wood struts in form for floor construction.—Pounds per square inch of cross section.—Dimensions of strut.

Length of strut. Feet	3 x 4 in.	4 x 4 in.	6 x 6 in.	8 x 8 in.
14	...	700	900	1,100
12	600	800	1,000	1,200
10	700	900	1,100	1,200
8	850	1,050	1,200	1,200
6	1,000	1,200	1,200	1,200

Bracing both ways will, of course, reduce the length of a long strut.

If the concrete floor is comparatively green the load must be distributed by blocking, preferably of hard wood. At the top of the strut provision must be made against crushing of the wood of the plank of cross piece. Ordinary soft wood will stand without crushing only about 700 lb. per square inch across the grain, so if the compression approaches this figure brackets must be inserted or hard wood cleats used.

The best contractors have definite rules for the minimum time which the forms must be left in ordinary weather, and then these times are lengthened for changes in conditions according to the judgment of the foreman.

Correspondence with a number of prominent contractors in various parts of the country, including the Aberthaw Construction Company, Boston; the Expanded Metal and Corrugated Bar Company, St. Louis; the Ferro-Concrete Construction Company, Cincinnati; the Trussed Concrete Steel Company, Detroit and the Turner Construction Company, New York, indicates substantial agreement in the minimum time to leave forms. As a guide to practice, the following rules are suggested, these following in the main the requirements of the Aberthaw Construction Company:

Walls in mass work: one to three days, or until the concrete will bear pressure of the thumb without indentation.

Thin walls: in summer, two days; in cold weather, five days.

Slabs up to 6 ft. span: in summer, six days; in cold weather, two weeks.

Beams and girders and long span slabs: in summer, 10 days or two weeks; in cold weather three weeks to one month. If shores are left without disturbing them, the time of removal of the sheeting in summer may be reduced to one week.

Column forms: in summer, two days; in cold weather, four days, provided girders are shored to prevent appreciable weight reaching columns.

Conduits: two or three days, provided there is not a heavy fill upon them.

Arches: of small size, one week; for large arches with heavy dead load, one month.

All of these times are of course simply approximate, the exact time varying with the temperature and moisture of the air and the character of the construction. Even in summer during a damp cloudy period, wall forms sometimes cannot be removed inside of five days with other members in proportion. Occasionally, too, batches of concrete will set abnormally slow, either because of slow setting cement or impurities in the sand, and the foreman and inspector must watch very carefully to see that the forms are not removed too soon. Trial with a pick may assist in reaching a decision.

Beams and arches of long span must be supported for a longer time than short spans because the dead load is proportionately large, and therefore the compression in the concrete is large even before the live load comes upon it.

The general uncertainty and the personal element which enters into this item emphasizes the necessity for some more definite plan for insuring safety. The suggestion has been made that two or three times a day a sample of concrete be taken from the mixer and allowed to set on the ground under the same conditions as the construction until the date when the forms should be moved. These sample specimens may be then put in a testing machine to determine whether the actual strength of the concrete is sufficient to carry the dead and construction loads. Even this plan does not provide for the possibility of an occasional poor batch of concrete, so that watchfulness and good judgment must also be exercised.

* * *

Unconstitutionality of Architects' License Laws

THE unconstitutionality of State laws requiring architects to practise under a license and forbidding those to practise who cannot procure one, is clearly affirmed by implication—since architects are explicitly mentioned—in the following ruling of the Supreme Court of the State of Washington, in which the unconstitutionality of the plumbers' license law is affirmed.

Judge Rudkin, who delivered the Court's opinion, said, in part:

"The power of the Legislature to make all needful rules and regulations for the health, comfort and well-being of society can not be questioned, but there are certain limits beyond which the Legislature, cannot go, without trenching upon liberty and property rights which are safeguarded by the State and Federal constitutions. As said by the court *In re* Jacobs, 98 N. Y. 108, 50 Am. Rep. 636: 'The limit of the power cannot be accurately defined, and the courts have not been able or willing definitely to circumscribe it. But the power, however broad and extensive, is not above the constitution. . . . Generally it is for the Legislature to determine what laws and regulations are needed to protect the public health and secure the public comfort and safety, and while its measures are calculated, intended, convenient, and appropriate to accomplish these ends, the exercise of its discretion is not subject to review by the courts. But they must have some relation to these ends. Under the mere guise of police regulations, personal rights and private property cannot be arbitrarily invaded.' And *In re* Aubrey, 36 Wash. 308, 78 Pac. 900, 104 Am. St. Rep. 952, this court said: 'It may be stated as a general principle of law, that it is the province of the Legislature to determine whether the conditions exist which warrant the exercise of this power; but the question, What are the subjects of its exercise? is clearly a judicial question. One may be deprived of his liberty, and his constitutional rights thereto may be violated, without the actual imprisonment or restraint of his person. "Liberty" in its broad sense, as understood in this country, means the right, not only of freedom from actual servitude, imprisonment or restraint, but the right of one to use his faculties in all lawful ways,

Residence of Mr. Otto Bollman, St. Louis
Link & Rosenheim, Architects

Staircase Hall, Residence of Mr. Otto Bollman, St. Louis
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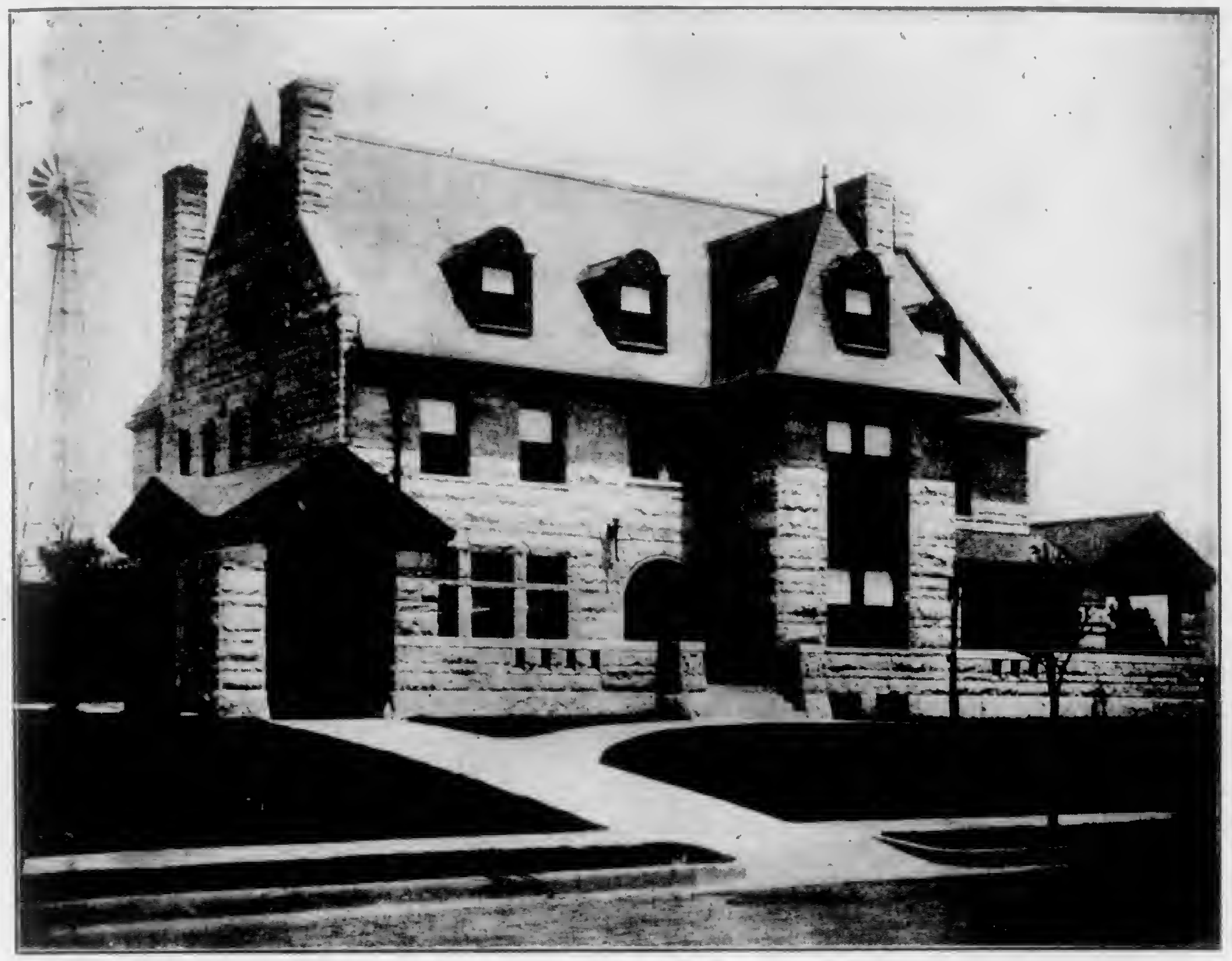

Residence of Mr. Otto Bollman, St. Louis
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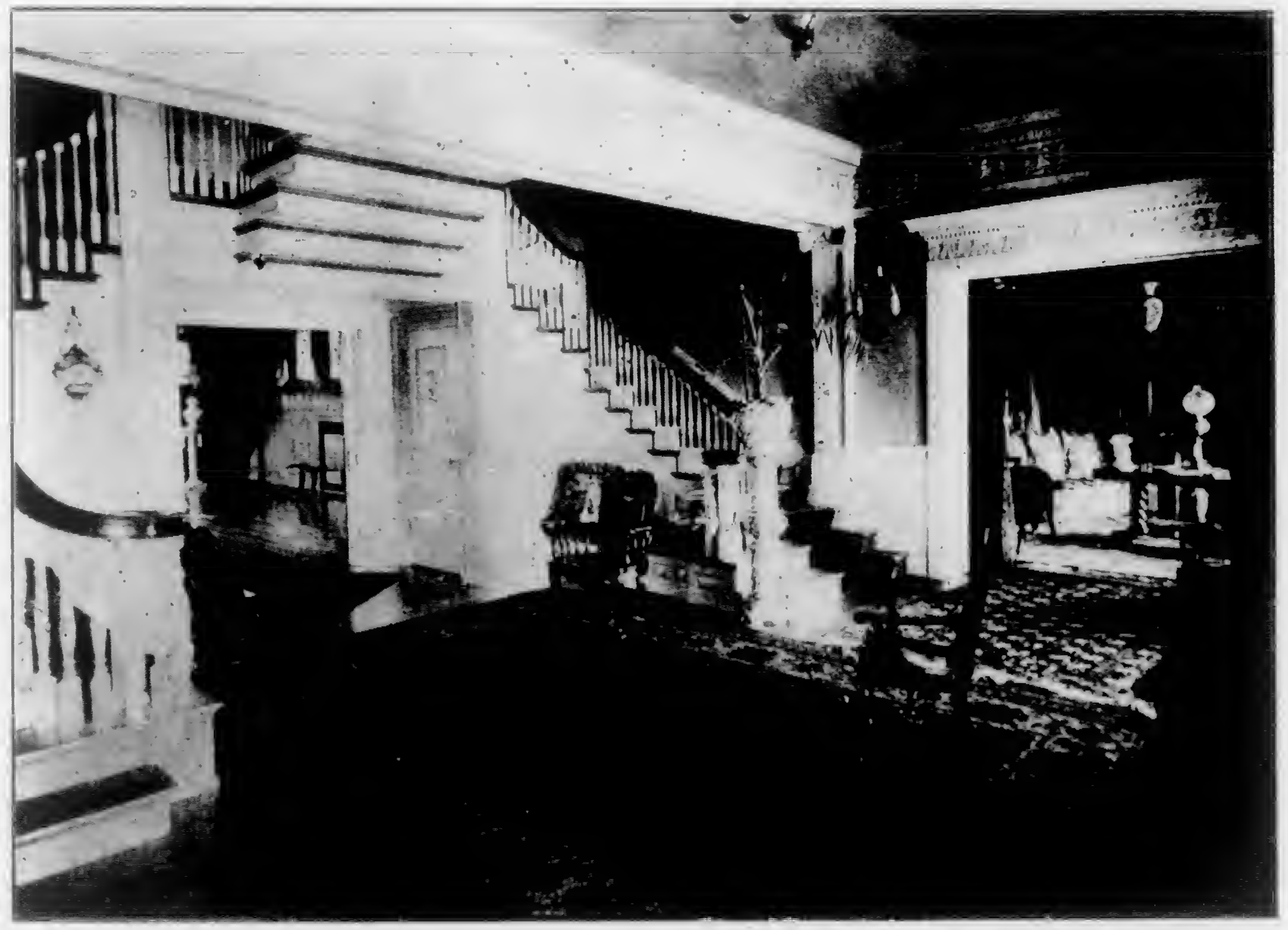

Staircase Hall, Residence of Mr. Otto Bollman, St. Louis
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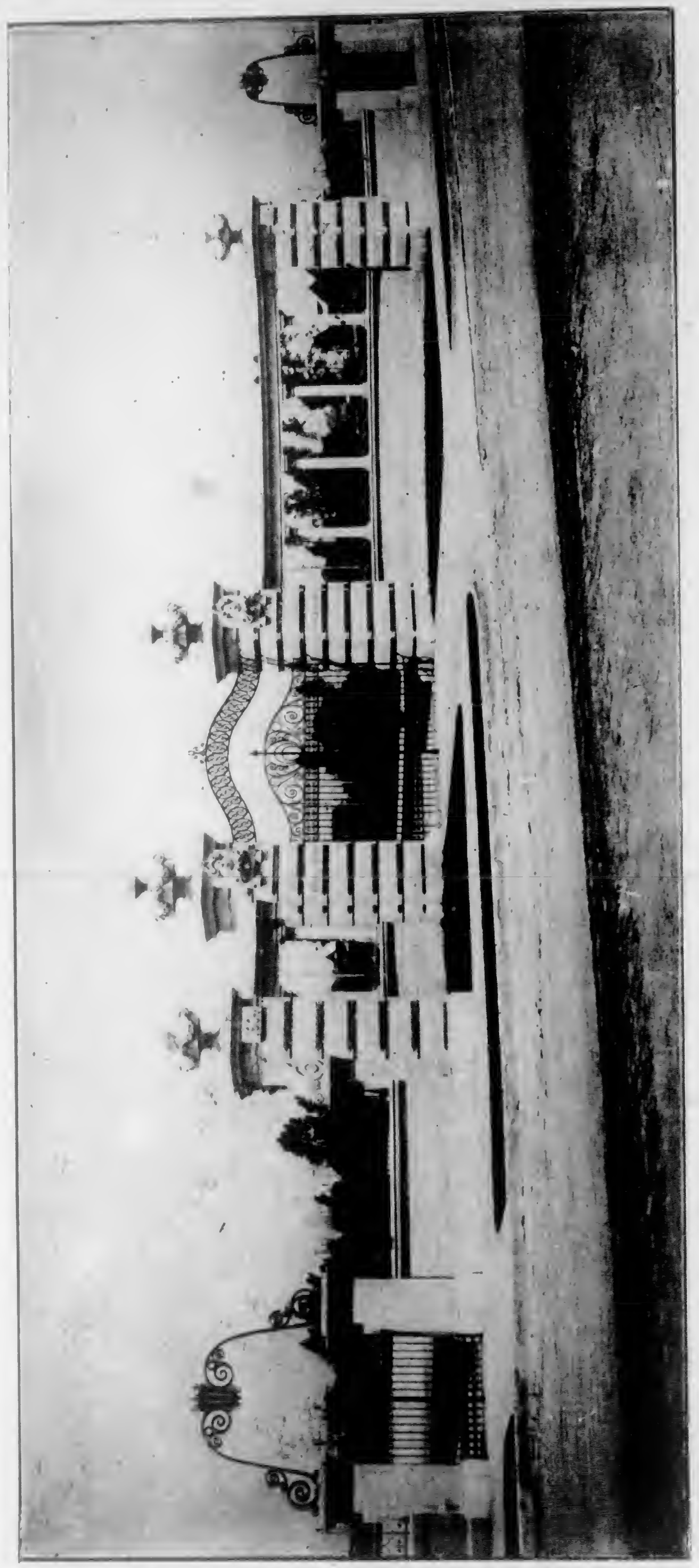
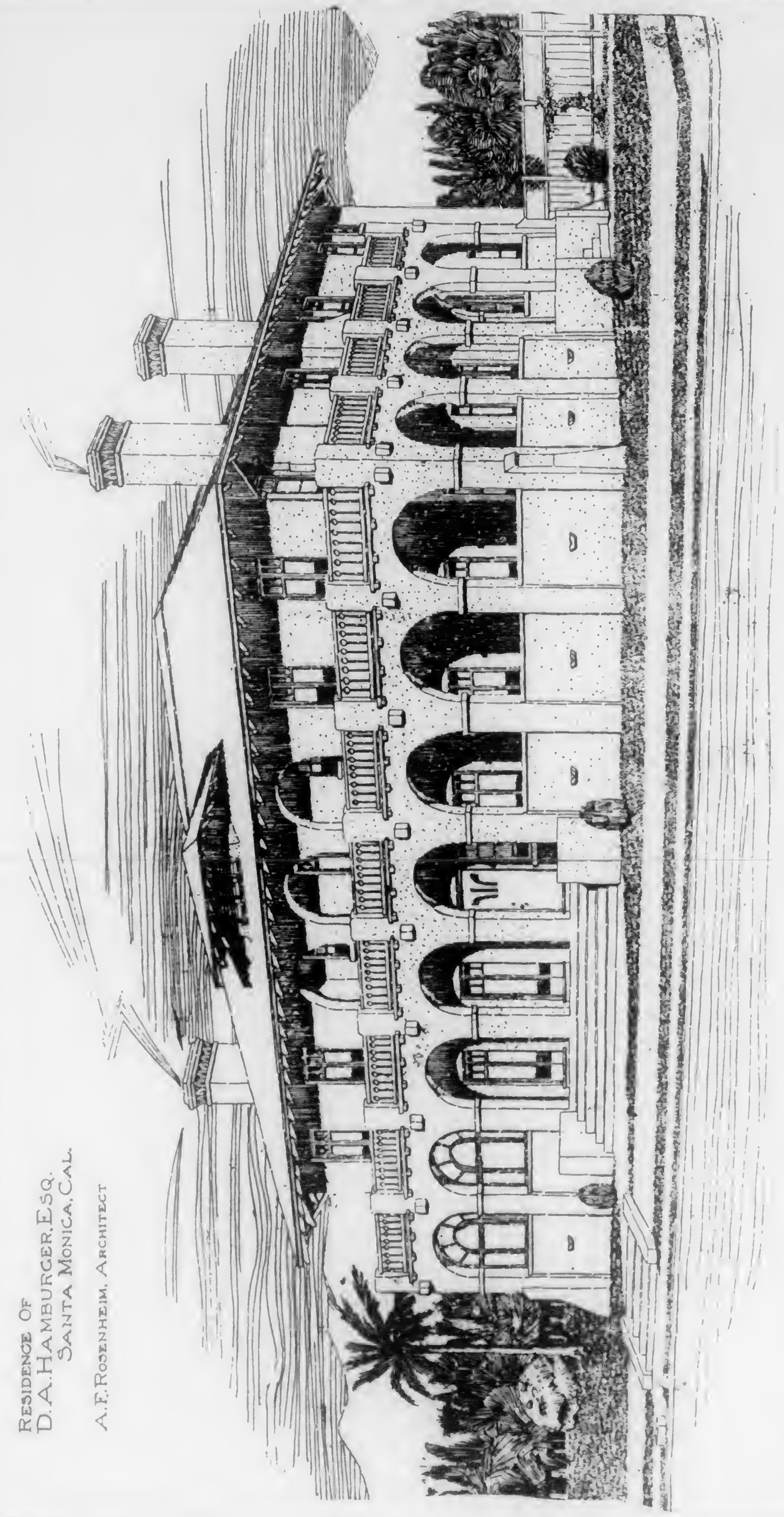


Entrance to Berkeley Square, Los Angeles
A. F. Rosenheim, Architect



Residence of Mr. D. A. Hamburger, Santa Monica to live and work when he will, to earn his livelihood in any lawful calling, and to pursue any lawful trade or avocation. All laws, therefore, which impair or trammel these rights—which limit him in his choice of a trade or profession—are infringements upon his fundamental rights of liberty, which are under constitutional protection.'

"We cannot close our eyes to the fact that legislation of this kind is on the increase. Like begets like, and every Legislative session brings forth some new act in the interest of some new trade or occupation. The doctor, the lawyer, the druggist, the dentist, the barber, the horseshoer, and the plumber have already received favorable consideration at the hands of our Legislature, and the end is not yet, for the nurse and the undertaker are knocking at the door. It will not do to say that any occupation which may remotely affect the public health is subject to this kind of legislation and control. Our health, our comfort, and our well-being are materially affected by all our surroundings—by the houses we live in, the clothes we wear, and the food we eat. The safety of the traveling public depends in no small degree on the skill and capacity of the section crews that build and repair our railroads, yet are we on this account to add the architect, the carpenter, the tailor, the shoemaker, those who produce and prepare our food, and all the rest to the ever-growing list? If so, it will be put a short time until a man cannot engage in honest toil to earn his daily bread without first purchasing a license or permit from some board or commission. The public health is entitled to consideration at the hands of the legislative department of the Government, but it must be remembered that liberty does not occupy a secondary place in our fundamental law. Under some of the acts to which we have referred members of the board of health form part of the examining board, but our act has not even this saving grace. By its terms two master plumbers and one journeyman plumber are constituted the guardians of the public health and welfare. We are not permitted to inquire into the motive of the Legislature, and yet, why should a court kindly declare that the public health is involved, when all the rest of mankind know full well that the control of the pumping business by the board and its licensees is the sole end in view. We are satisfied that the act has no such relation to the public health as will sustain it as a police or sanitary measure, and that its interference with the liberty of the citizen brings it in direct conflict with the Constitution of the United State.

"The judgment should be reversed, and the prisoner discharged; and it is so ordered."

Judge Root, concurring, also said:

"To the foregoing may be added this thought: The liberty and natural rights of a citizen—such as his privilege to engage in a lawful vocation for a livelihood—can be denied him by the Legislature only where such deprivation is necessary to accomplish a given result essential to the welfare of the public. If that result can be attained in a practicable manner without interference with such liberty and rights, there is an absence of that necessity which is an essential and prerequisite to the validity of such a statute.

"In the case at bar the only justification urged in behalf of the statute is that good plumbing is necessary to the health of people in cities having over 10,000 inhabitants. Avowedly it is sought to insure good plumbing by means of this statute. It is self-evident that the same, or a better, result can be obtained by means of statutes or ordinances requiring good plumbing, and insuring it by means of adequate inspection. Such a statute

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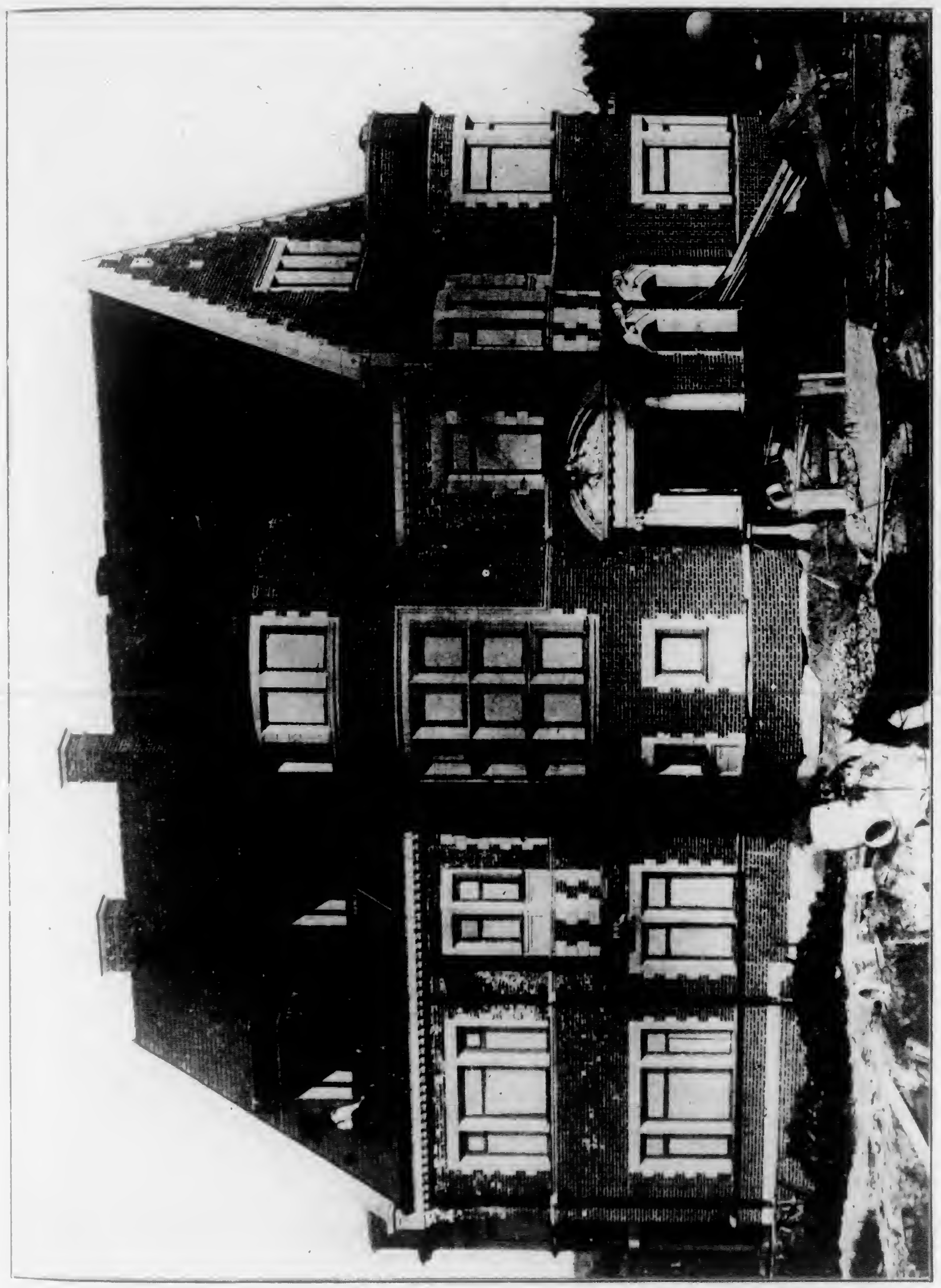

Residence of A. F. Rosenheim, Los Angeles, now being completed

Reception Room. Office of A. F. Rosenheim

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* * *

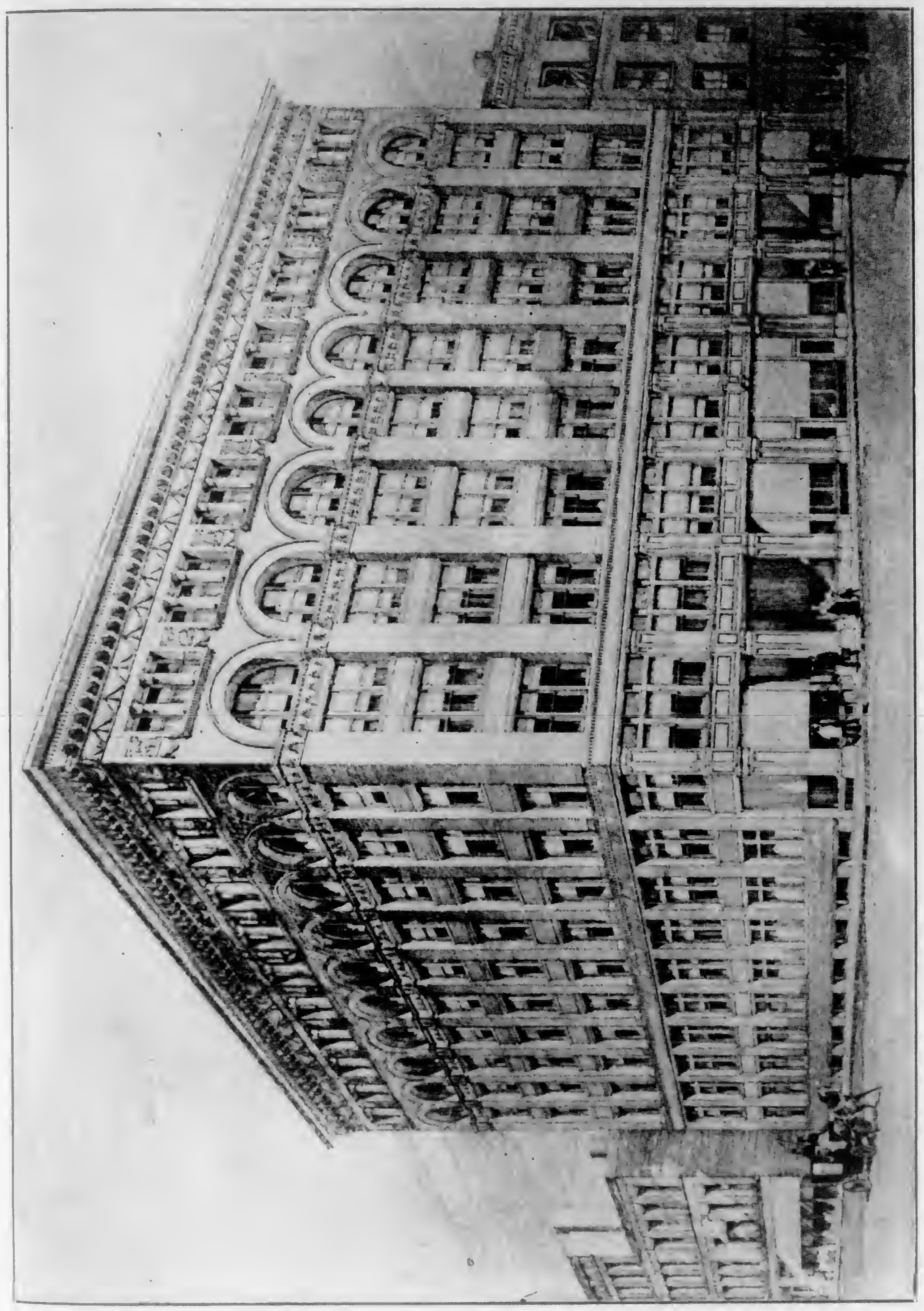
Production of Lime and Sand Lime Brick

A PAMPHLET just issued by the Government contains much interesting data prepared under the direction of Edwin C. Eckel, relative to the production of lime and sand lime brick in the United States during the year 1905, the figures showing a valuation of products of $972,064, as compared with a valuation in 1904 of $463,128. The number of operating firms reporting was eighty-four and the quantity of common brick manufactured was estimated at 119,131,000, with an aggregate value of $783,702, an average value per M of $6.58.

The quantity of front brick manufactured was estimated at 16,562,000 with an approximate value of $182,519, an average value per M of $11.02.

Fancy brick was manufactured to the extent of 198,000 with a total value of $4,338, an average of $21.91 per M.

Large building blocks were produced whose total value was $1505, a total value of all the products being $972,064. Comparing these figures with the reports of 1903 and 1904, there has been a steady increase in the number of operating plants, although not a phenomenal one. Furthermore, the ratio of development has been steady.



Competitive Design for Store Building, St. Louis. A. F. Rosenheim, Architect

Reception Room, Office of A. F. Rosenheim

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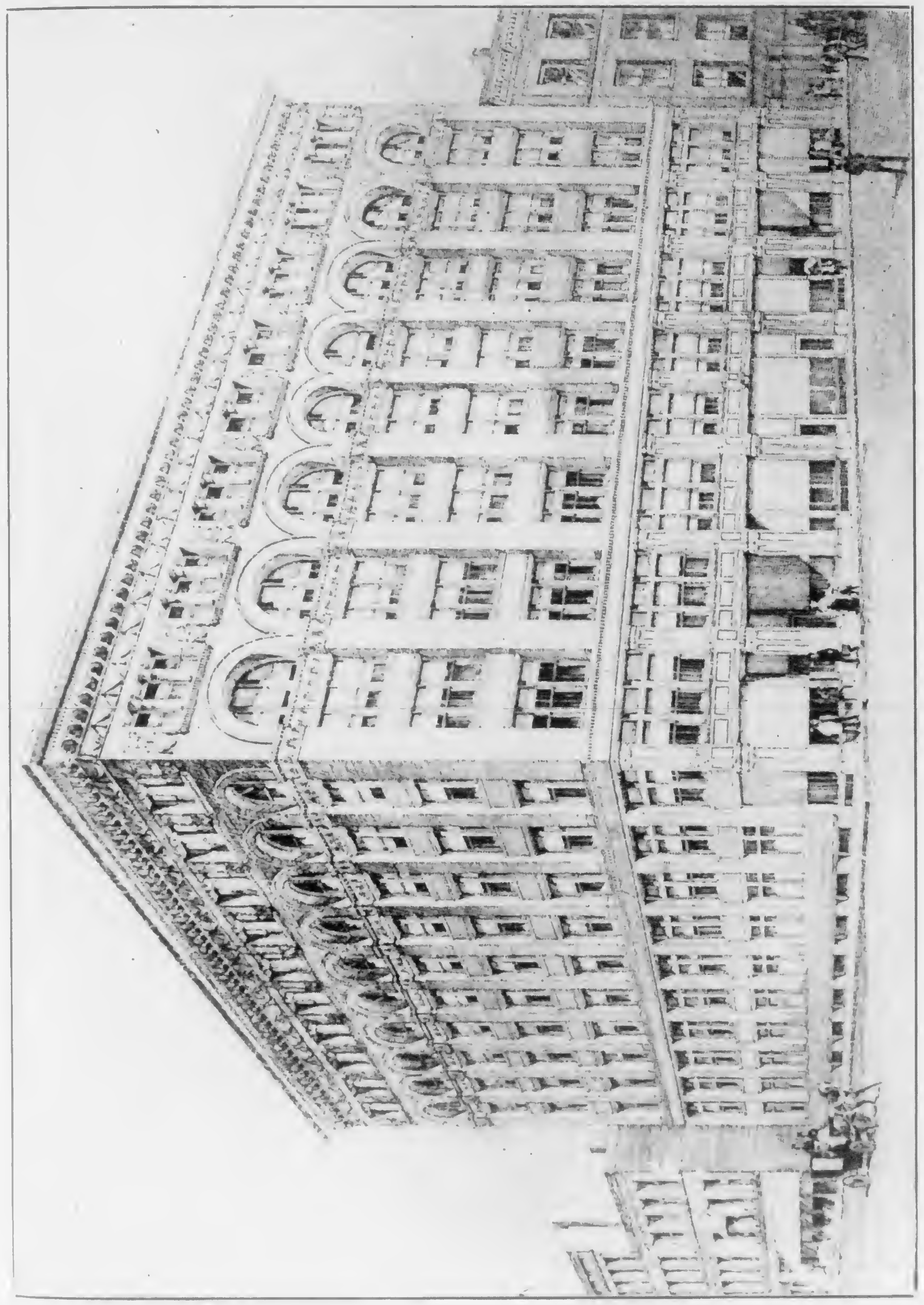
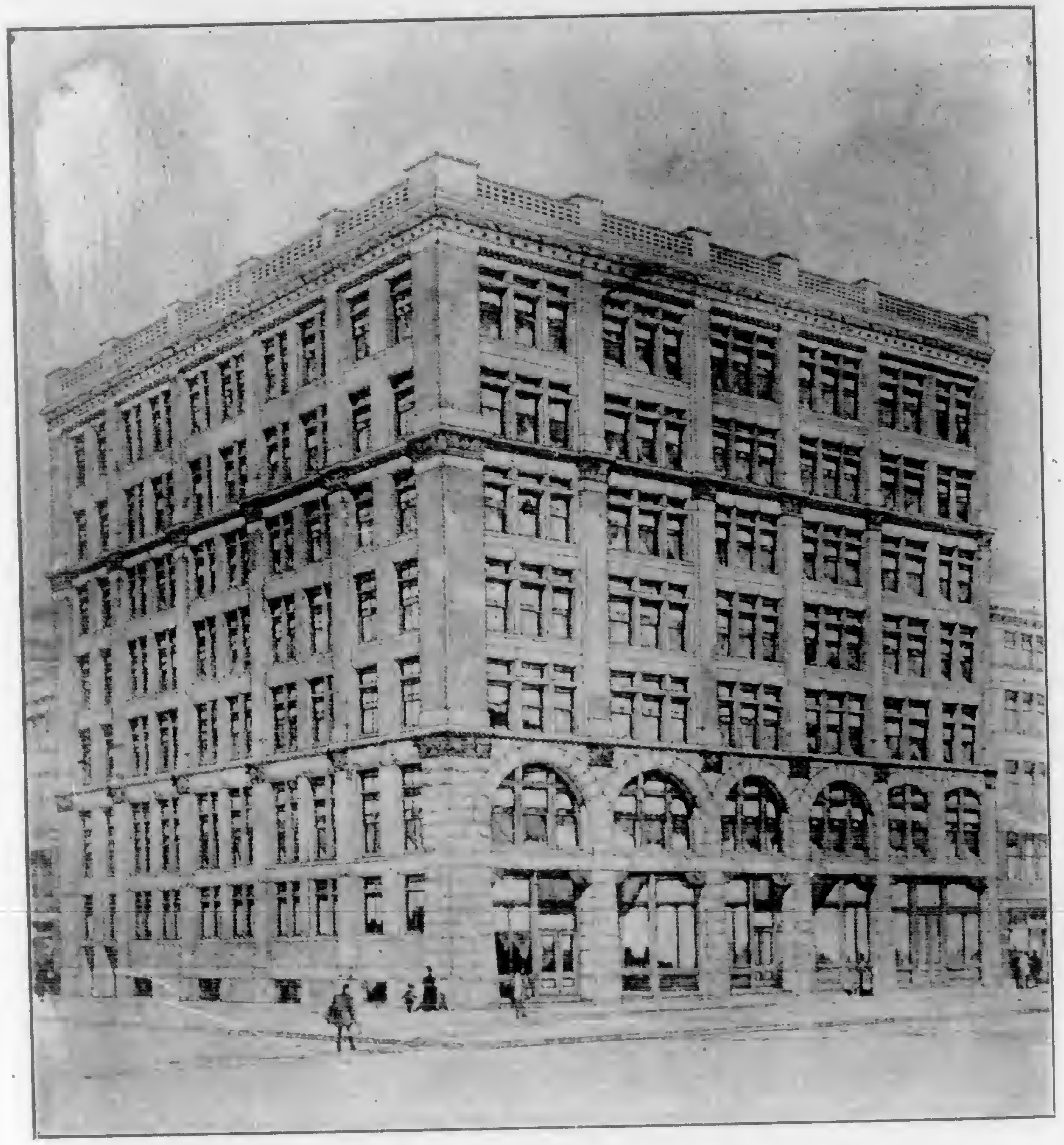


Competitive Design for Store Building, St. Louis, A. F. Rosenheim, Architect

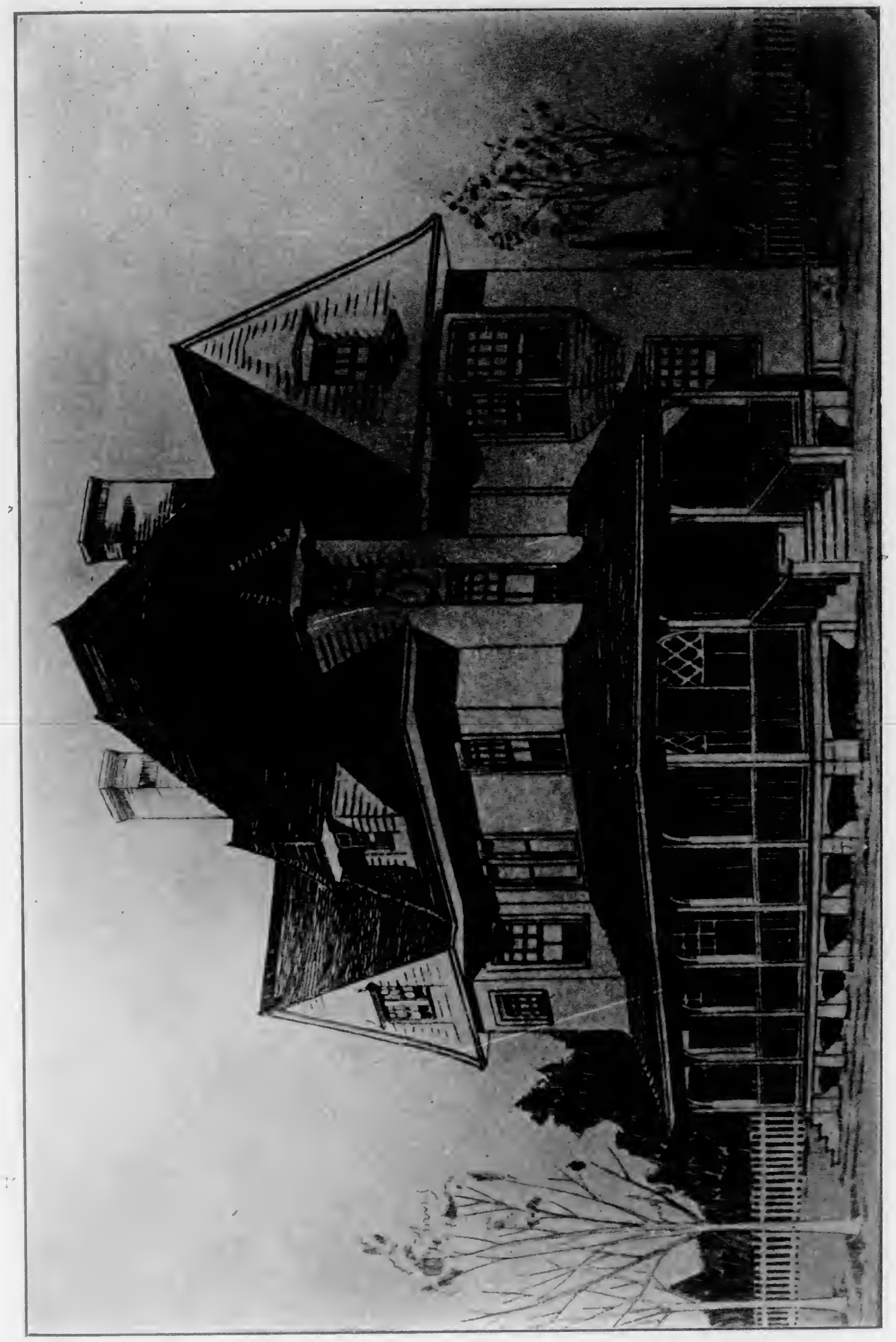


Store Building, Ninth Street and Washington Avenue, St. Louis
A. F. Rosenheim, Architect

This House One Huge Joke

John Baxter of Monrovia, Cal., is building a new house on the site of an old house and building the new house out of the material of the old house and living in the old house while the new one is being built. Once when a new jail was wanted in Dublin an Irishman proposed some such bill on the floo of the British Parliament and it was considered a bull and his bill was laughed down.

Baxter is taking advantage of an extra ten feet of land on the avenue side of his livery stable to build the outside wall of his new building, and as this wall goes up the rafters of the old structure are to be pieced out to the new wall and the boards in the old wall are used in making partitions. When the front wall is built in of brick the old wooden wall will be taken down.



House at Chamberlain Park for Mr. N. Kaufman. A. F. Rosenheim, Architect

Answers Mr. Cummings

By W. F. BARNES

THE readers of your valued journal are certainly indebted to Mr. Cummings for the article on "Portland Cement" in your January issue.

The author of "American Cements" should be able to give a thoroughly scientific account of the making up of Portland cement; he does not follow me, however, in my more modest efforts to show that reinforced concrete, as a safe building material, has had no satisfactory demonstration in San Francisco.

There were many lamentable cases of failure of reinforced concrete floors, as even disinterested observers must know. I am absolutely certain, and I know many men who express the same opinion, that if there had been reinforced concrete skyscrapers in San Francisco, before the fire, they would have been utterly ruined. On the other hand, all of the first-class brick and steel structures stood the trial grandly. They are rapidly being refitted, and many of them are already occupied.

My contention has been that the present rage for concrete buildings, is largely the result of the excited condition of the public mind, and it is not based upon any legitimate evidence of earthquake or fire proof quality that the concrete adherents can offer. Men who have seen buildings of brick and stone suffer in the conflagration want to believe that reinforced concrete is indestructible. The reinforced concrete advocate had a believer before an argument had been offered; at length concrete buildings become the rage.

Nothing could better prove the fad nature of this craze than the inconsistency in the buildings that are now being put up. A structure, two-thirds of which may be brick, is given a concrete face. It can hardly be credited that this is done for appearances' sake, because the concrete face is undeniably dull and ugly, nor can there be any structural fitness in such a thing. It is simply a trick, playing to a popular whim, and it really disgraces materials that are used.

To my mind such construction as the new building at Market and Davis streets, and in a number of other places throughout San Francisco is dishonest, and such inconsistencies are what we would like to have explained, and not a treatise on the manufacture of cement from a laboratory standpoint.

* * *

Life consists not so much in what we want, but in what we get and making the most of it. "What's the use in my getting married," said an old maid. "I've got a parrot that swears, a monkey that chews tobacco, and a cat that goes out nights."

* * *

Miss Dubley—"She was braggin' about how successful her dinner party was. She said it wound up 'with great eclaw.' What's 'eclaw,' anyway?"

Miss Mugley—"Why, I guess that was the dessert. Didn't you never eat a chocolate eclaw?"—Philadelphia Press.

* * *

"Is that all the work you can do in a day?" asked the discontented employer. "Well, suh," answered Erastus Pinkley, "I s'pose I could do mo', but I never was much of a hand foh showin' off."—Washington Star.

San Francisco Water Supply for Fire and Flushing Purposes

By ROBERT MORGENEIER, Architect and Engineer

OF the many present needs of the municipality of San Francisco, none, in my judgment, equals in importance and urgency, the need of an early, adequate and permanent supply of water for fire, sewer flushing and kindred purposes.

Such a supply must meet the requirements most forcibly placed before us by recent events, which events include the destruction of the greater part of the city by fire, and this for no other reason than the lack of water when and where most wanted. We can not hope to rebuild and progressively enlarge the city and at the same time ignore the urgent demand of a complete and perfect protection from fire.

A careful study of the requirements in connection with such protection will show them to be eight-fold, and condensed to statements of facts are as follows, viz.:

First—For fire and flushing purposes the supply of water must be unlimited.

Second—The source of supply must be unfailing.

Third—The supply must be free of cost.

Fourth—It must not draw upon the potable water brought to the city.

Fifth—The supply must be uninterruptable, continuing during severest earthquakes, or any disturbance whatsoever.

Sixth—The cost of its installation must be reasonable.

Seventh—The acquisition and use must be possible in a comparatively short time, and be capable of progressive extension.

Eighth—This installation must not interfere with vested property rights, and not interfere with business now or later on, carried on in the city, or the travel on its streets.

Now, a protracted investigation of these requirements leads to certain conclusions which, briefly set forth, are the following:

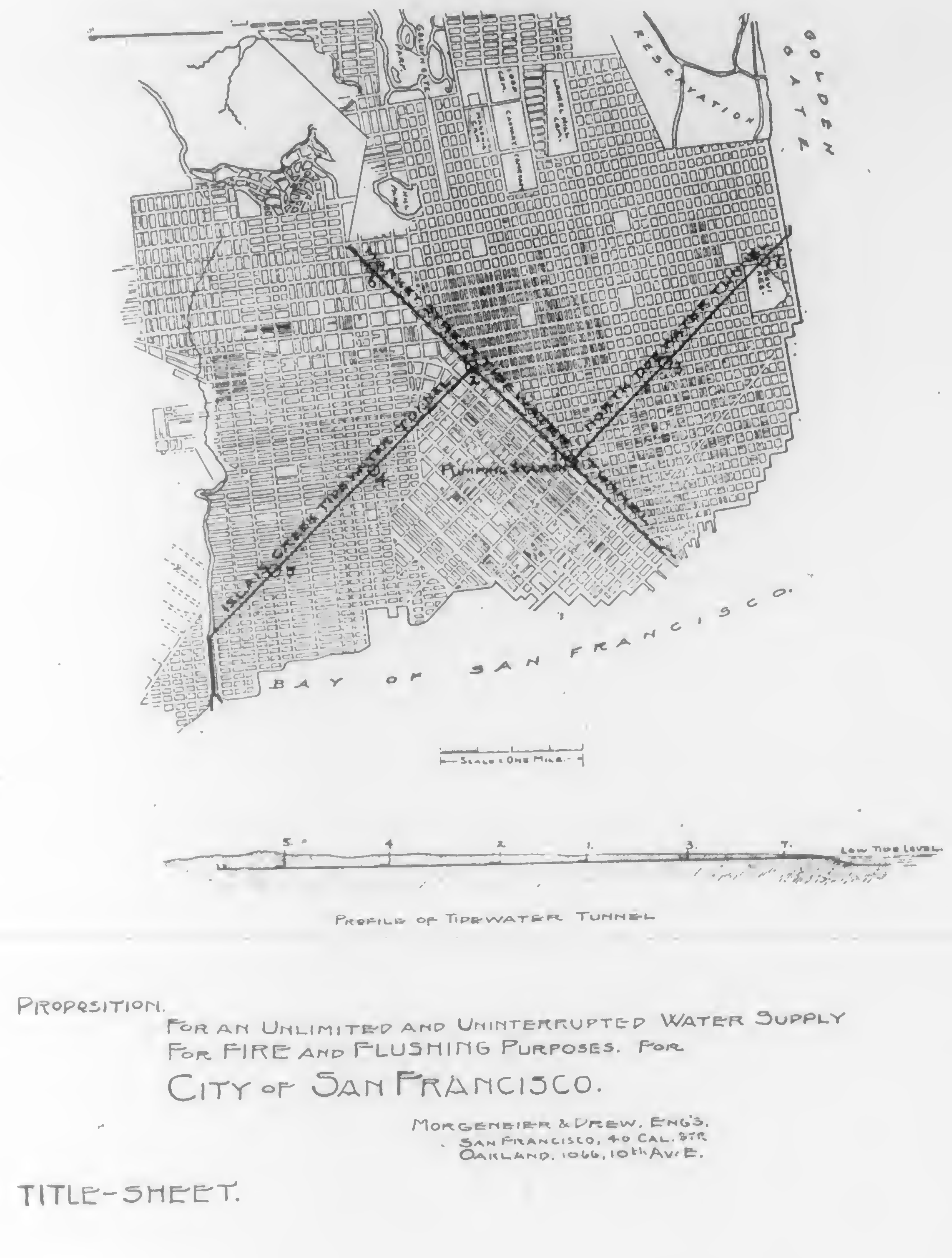
An unlimited supply of water for this purpose can not be obtained from the land surface, but it can be had from the sea, which practically surrounds the city. Also the sea is the only unfailing supply. Further, being at our doors, so to speak, it can cost nothing, and its use does not diminish the supply of potable waters. On the contrary, its extensive use, wherever possible, will tend to materially conserve it by reducing the demands thereon. All water carried in surface ditches or flumes in surface or entrenched pipes are liable to interruption at any time, and did fail us most miserably on April 18, 1906, when the earthquake touched them.

With an uninterruptable supply of water, the fire department could have prevented the conflagration following the earthquake.

There is one uninterruptable supply namely the sea, and consequently this should be allowed to flow subterranean of the city by way of a tide level water tunnel, or tunnels. Tide tunnels can be readily constructed, progressively extended and branched off and equipped with piping and pumping station units, reservoir units, and private unit connections where asked for.

A tide level tunnel can be rapidly constructed without surface disturbance, and put into use, block by block, as the work progresses.

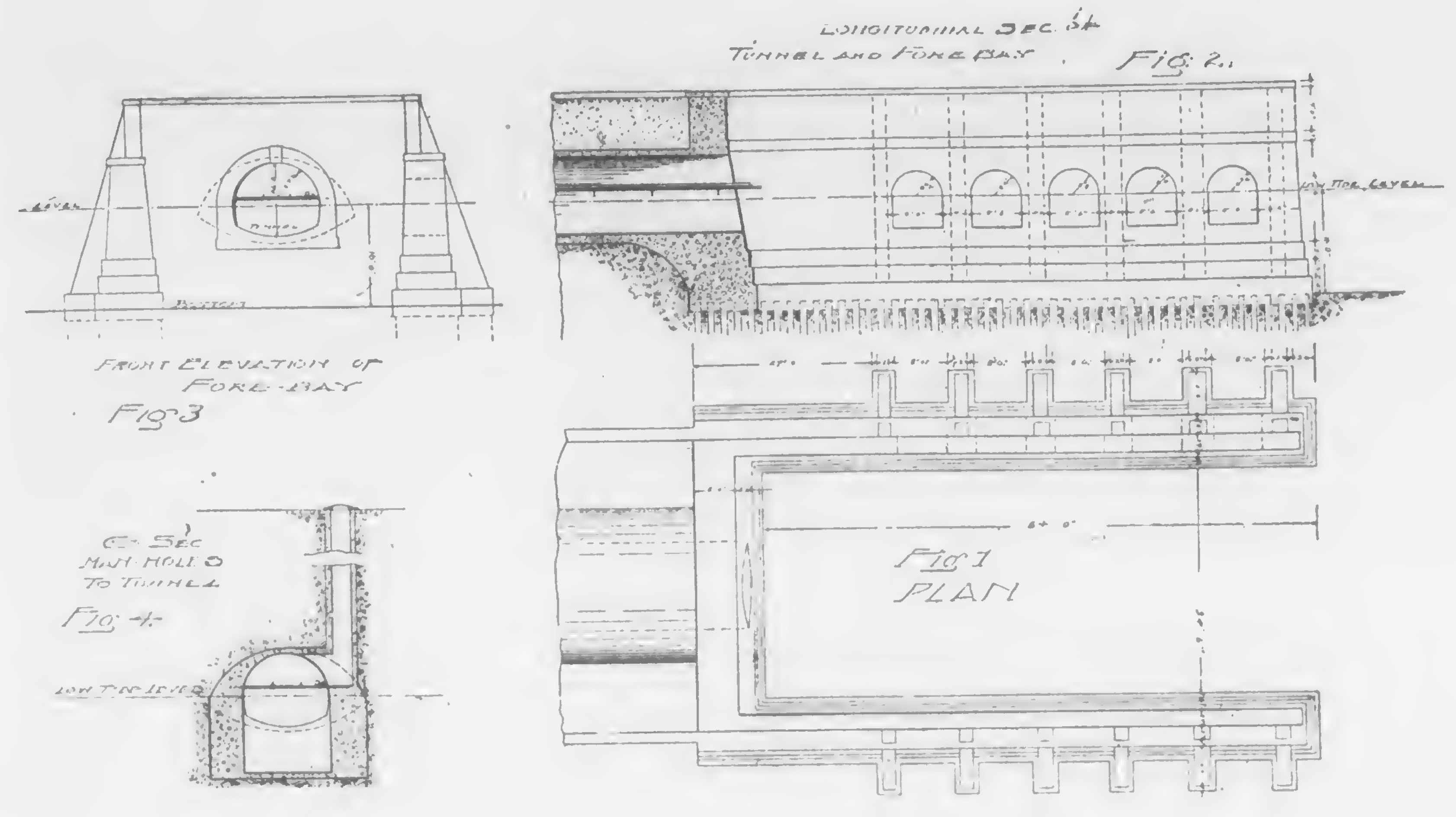
Having read the requirements and conclusions as above stated, it may interest the engineer to examine the appended two sketches. On sheet


GOLDEN GATE
RESERVATION
BAY OF SAN FRANCISCO.
PUMPING STATION
SCALE: ONE MILE
5. 4 2 1. 3. 7.
LOW TIDE LEVEL
PROFILE OF TIDEWATER TUNNEL
PROPOSITION.
FOR AN UNLIMITED AND UNINTERRUPTED WATER SUPPLY
FOR FIRE AND FLUSHING PURPOSES. FOR
CITY OF SAN FRANCISCO.
MORGENBIER & DREW, ENG'S.
SAN FRANCISCO, 40 CAL. STR
OAKLAND, 1066, 10th AV. E.
TITLE-SHEET.

No. 1 I have laid down the general course or direction of the main stems of a tide level water supply tunnel with head works as indicated, consideration being taken for its effectiveness in every known condition of land and tide. Heed is also taken of the present need of fire protection.

On sheet No. 2 are shown in general arrangement a few features of such tunnel construction, particularly one of the fore bays or intakes. Gate, pump and piping equipments are not shown.

On sheet No. 2 is shown a tunnel bore of 12 feet 2 inches. This diameter applied to the entire tunnel shown on sheet No. 1, plus pits, manholes, approaches and reservoirs, shows a total yardage of 225,280, and the cost of such tunnel complete may be estimated at $5.00 per cubic yard, or $1,126,400.



The tunnels completed, including a general pipe distribution to reservoirs at high elevation, pumps therefor, and of unit connections thereto, such units ranging from a single large pumping station to a single large reservoir, down to unit deep well pumps at manholes, will cost on completion, less than $5,000,000, and will be an effective factor in preventing conflagration upon an expenditure of one-half that amount.

The tunnel contour shown is for a self-supporting section in unstable ground. This contour to be contracted to a six-inch shell of slightly reinforced concrete, where the soil or rock encountered permits it.

In passing it may be stated that the tunnel is to accommodate a depth of four feet of water at low tide. It is not proposed to make the construction of greater strength than that required by the load, for in case of an earthquake its location subterranean affords considerable protection, and so long as there is a city above it will perform its functions of leading water where required. Earthquake shocks might divide it into any number of parts, but the sea would traverse these parts about as well as when the tunnel was intact. To imagine this water supply entirely cut off, would include an engulfing of the territory in which it was built, and consequent thereon, an end of all things human, as pertains to such territory.

The main purpose of this communication is to awaken an interest in a feasible project to thoroughly safeguard San Francisco against fire, now and for all time to come, and in addition give it a flushing water supply so abundant that it will also be the cleanest, healthiest, and most attractive city in the world. If there are any other plans as comprehensive or more feasible, then let them be forthcoming, but let us spend neither time nor money in Lilliputian efforts at surface ditching, entrenched or surface piping. Their doubtful efficiency sinks to zero at the first keen shock of earthquake, or ceases entirely when the parched earth awaits long hoped-for rain.

Color in Concrete Construction

IN the mad rush for the almighty dollar which we as Americans are apt to engage in, is it not well to pause, if only for a moment, and consider the beauty, or the lack of beauty, of our work from an artistic standpoint? I think it worth while, for, after all, it is the things that are pleasing to our various senses and that make life pleasant for others, that count in this world, and so I will take up a few moments of your time and try to tell you something about color, said L. A. Moore before the National convention.

Concrete, so far, has been used almost wholly for what is termed "warehouse construction," and we must concede that in its natural state, while it may be "a joy forever" it can not be called "a thing of beauty." But as the price of lumber goes higher, and it is sure to go still higher, concrete will be used more and more for that class of buildings which call for more or less artistic effects, such as dwellings, schools, churches, etc., and it is well to be prepared for it. The question of color is, of course, a matter of taste, but due consideration should be given to the harmonious contrasts. Red with green, black with a warm brown or green, deep red with gray, green with buff, brown with a light pea green, are in my estimation some of the most pleasing effects.

The most important thing to consider in color is its permanency. Think for a moment of the effect of investing, say $10,000, in a building, and in one or two years the color has faded out or partially faded out. There is no remedy for this condition, and the effect can be imagined.

In order to secure permanency in color it should be selected from the natural pigments, and by natural pigments I mean such as are furnished us by mother earth, and not chemical compounds. In other words a color should be prepared especially for the concrete manufacturer and not for the painter. As an illustration of the goods the painter uses, I would say that the so-called English Venetian red sold in the paint store is made by burning copper so as to produce a red oxide of iron. Then about ten pounds of this is taken and ninety pounds of some of the lime products, such as gypsum or whiting, and this is added as a "filler." This product while all right for the painter who mixes it with linseed oil is not suitable for the manufacturer of concrete, for the reason that it will not only not stand the action of the cement, but the lime will cause efflorescence. This is especially true on faced brick where the lime is on the exposed side.

After making your selection of color, the next and most important thing to consider is the mixing. On this authorities differ. Most authorities advise mixing the cement with the color first. Personally, I do not agree with them, unless the sand is wet, in which case it is liable to lump. My reasons for my opinion are, first, that the full strength cement will act directly on the colors and sometimes change their nature, and again you can not rub out the small particle of color as well with a fine cement as you can with sand. My preference is to mix about equal proportions of sand and color, first, then rub out the small particles of color with a rubbing motion, not a stirring one. Whichever way you do I want to emphasize this, mix it thoroughly, otherwise you will not only not develop the full strength of the color, but you will have a nice imitation case of smallpox on your brick or blocks.

As to the effect of color on the strength of your concrete, or the hardening of it, if you will consider it as so much sand, that is a neutral consistent, it will do no harm when used in any reasonable quantities, say not to exceed 5 per cent.

No specific formula can be given for producing a given shade, so much depends upon the quality of the cement, the grade of sand and even the analysis of the water, and above all the thoroughness with which it is mixed. The only way to secure the desired shade is to obtain your colors and experiment with them.

The pigments should be finely ground. While a coarse pigment does not injure the concrete it is obvious that you do not want to pay for sand. You can get this product cheaper at home. To test it, rub the color with a palette knife on a piece of glass or even between your thumb and finger; if it is gritty you will know you are buying some sand in place of color

A word as to the cost. While this question can not be determined accurately, one authority has figured it out as follows: The figures are given per thousand brick: Gray or drab, 75 cents to $1; buff, $2.25 to $2.40; red, 90 cents to $1.60; brown, $1.20 to $1.35; green, $25. This for coloring brick solid. If faced only, the cost would be only about one-tenth of this amount, so you will see that a little beauty added to the building is not very expensive. In buying your color it should not be figured on the basis of the price per pound, but on the cost per thousand brick or cubic feet on blocks. A color costing ten or fifteen cents a pound is sometimes cheaper than one costing one-tenth of this amount. For estimating the cost of coloring blocks reduce the dimensions of brick to cubic inches and figure on that basis.

* * *

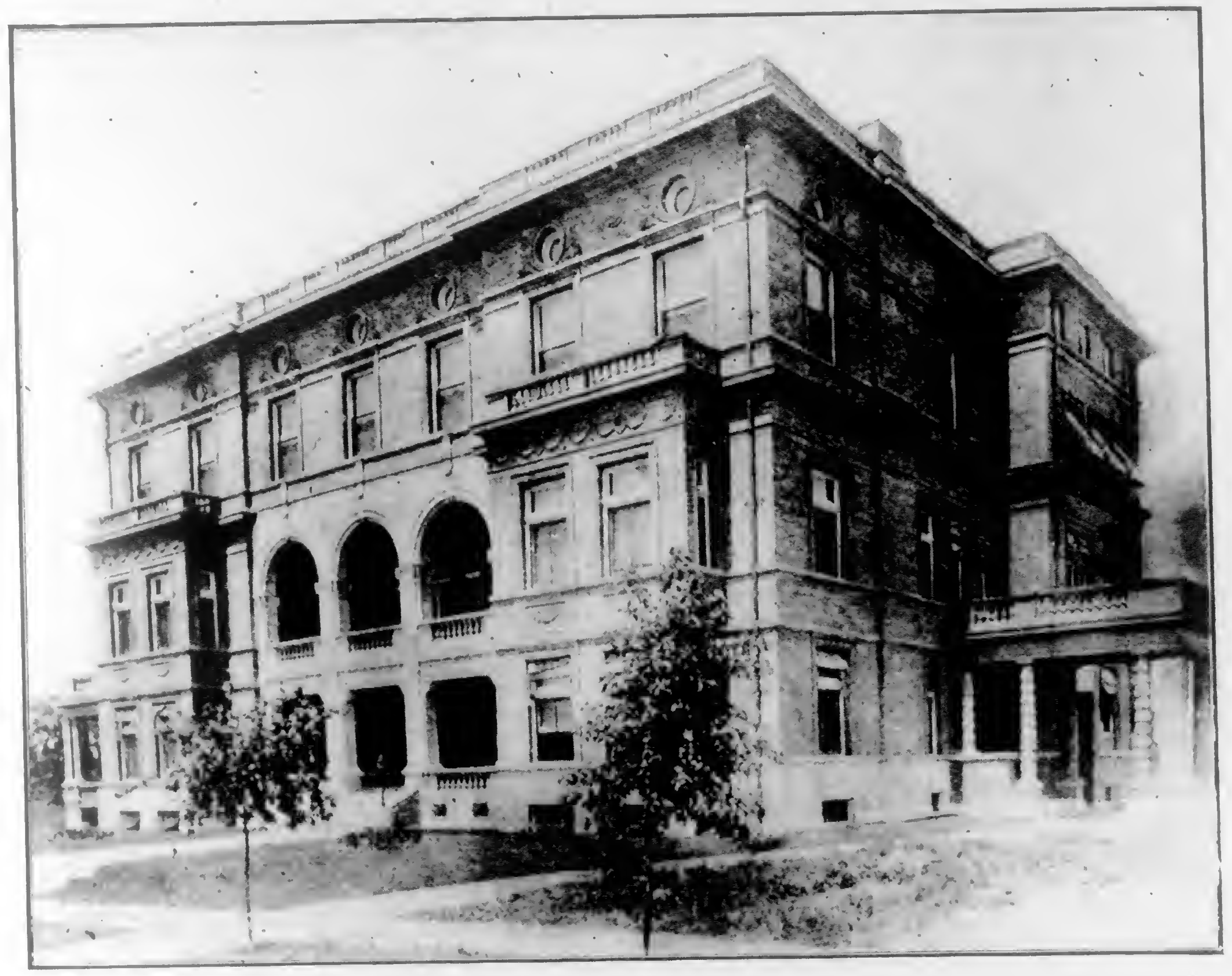
Heating by Hot Water

HOT water systems for heating have their earnest advocates in large numbers. Theory and experience have brought into existence many inventions and improvements which, by their practical application, have advanced this method of heating to a high state of perfection. The distinctive advantages claimed for hot water heating are its economy of fuel and the more satisfactory degrees of temperature attainable.

In a general way the hot water system is a duplicate of the steam heating plant, with such variations as are made necessary by the slower movement and greater weight of the water. The hot water system is more expensive to install, requiring larger pipes and more of them, and a far greater area of radiating surface. It is also less responsive than the other systems, requiring a considerably longer time to warm the house, but once in action it maintains a steady heat at a fixed temperature so long as it has reasonable attention. It is probably the least exacting in its demands for attention of all systems, and therein is one of the dangers. We are sometimes apt to expect too much. A radiator in a remote part of the house may be turned off inadvertently and allowed to freeze, bursting a section, a flood following. An air valve may become slightly disarranged and flood an upper room with water. No system is without its defects or its exactions in the matter of attention.

* * *

"Our Henry's doin' real well in town," said Mrs. Wayback, proudly. "He's runnin' a hotel now an' it's a big one." "Land sakes!" exclaimed Mrs. Korntop. "Yes. Got a letter from him this mornin', an' he sez: 'I'm a hotel-runner now, an' it's a real swell place.' "—Philadelphia Press



Columbia Club Building, St. Louis A. F. Rosenheim Architect

Main Lobby, Columbia Club, St. Louis A. F. Rosenheim, Architect

Practical Interior Decorations

THE main object in furnishing and decorating an apartment is to produce perfect repose; and such repose is produced by the mutual harmony of the proper combinations of shades and colors in whatever a room contains. Some very popular treatments, from which results both pleasing and decorative can be obtained, are wall-papers with crown frieze, dyed and painted burlaps, tapestries and silks, also frescoed and tinted effects. The style and situation of a room often make it difficult to get the desired result without going to a seemingly unnecessary expense and labor.

Strictly speaking, there are no laws for interior decoration, with the exception of the law of good taste, which must indeed be intuitive to be felt and appreciated. A true feeling for the artistic is a gift of faculty not possessed by all; yet it is possible to give many useful hints and suggestions to the average man or woman, for guidance and direction in the matter of selecting decorations, that the home may be rendered pleasing and artistic in appearance and arrangement.

The proper way to decorate a room is first to consider well the size, shape, and relative location, then the greater or less degree of light in a room, then color and design. The color should not be chosen arbitrarily, but for a definite and obvious reason.

The purpose and character of an apartment will often determine what are the most desirable colorings; but the degree of light and the dimensions of a room are perhaps the chief factors in solving the problem of its most appropriate color. In rooms facing the north, the light varies from whitish to bluish in color, and requires the decoration to be luminous tints, ranging from an orange yellow to a warm red. On the other hand, rooms with a southern exposure should be decorated in tints varying from greenish yellow to blue, because the south light has both yellow and purple in it. In apartments facing the east or west the best effects are produced when yellow tones are used, as the light from these cardinal points has both yellow and purple in it.

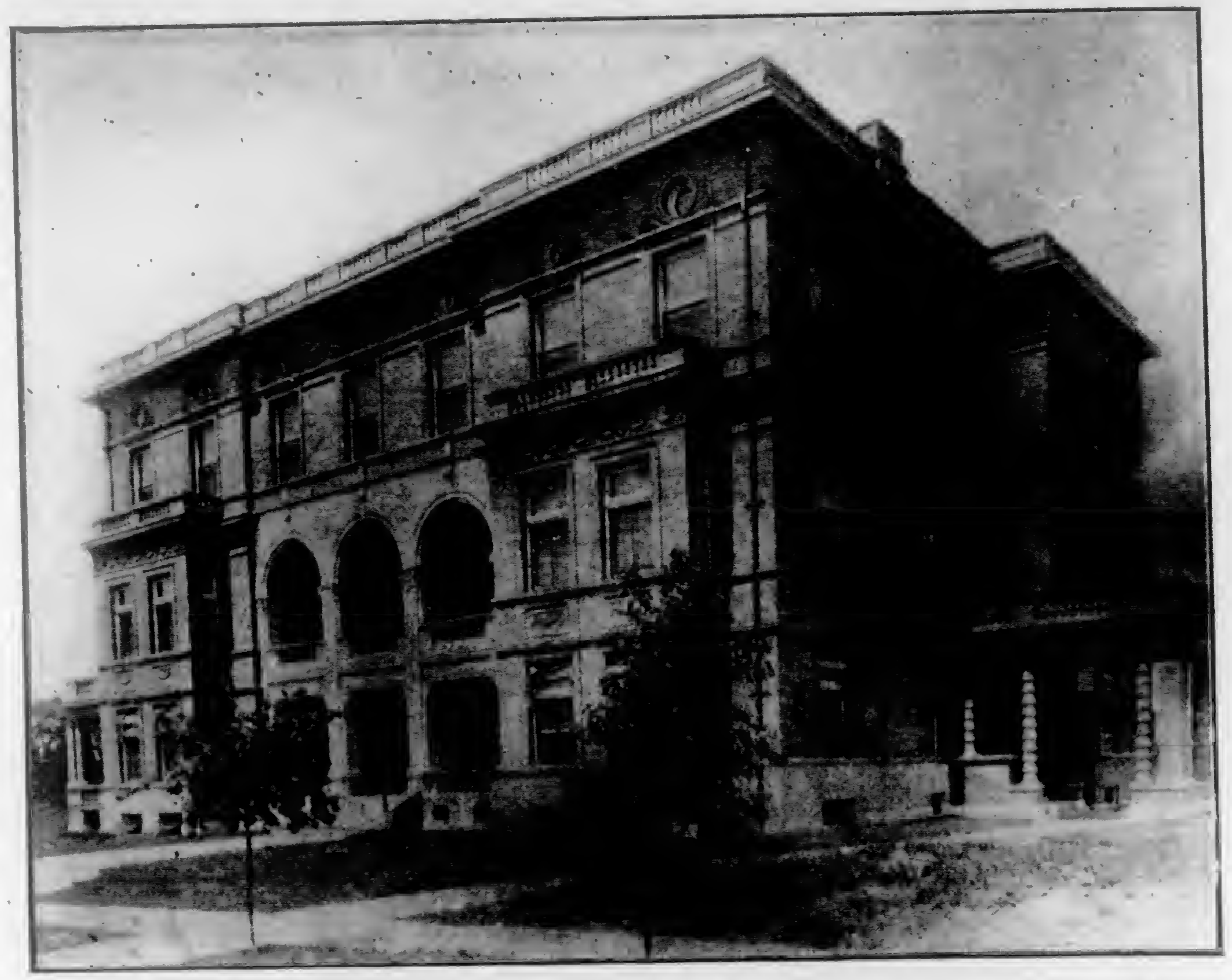
The hall is what we usually come to first in entering a dwelling, and should be decorated in strong colors. In some cases dark colors are preferable, while the rooms leading from the hall may vary from the strong to the lighter tones. Reds, dull yellows, browns and tans are suitable for hall decorations, while libraries should partake of the same colors, with the addition of olive greens and deep blues.

In dining-rooms, warm, soft reds, bright greens and browns are very desirable, if we are using wall-paper as a decoration. Tapestry effects are very pleasing, and scenic or perspective tapestries are very suitable for these rooms.

Drawing-rooms are best decorated in bright shades, yellow, ivory, rose and greens being suitable, while reception-rooms may be similar, with a rather deep tendency.

Bedrooms and dressing-rooms should be in light, soft shades of various tints, in floral and stripe designs. These rooms should be decorated so as to have an airy and cheerful appearance.

In rooms in which the walls are going to be used as a background for pictures, I should consider a plain red or green effect the most desirable. Of course, I would take into consideration the style of the pictures. If the majority of the paintings were in oil colors, with gold frames, red would



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Passing on now to the woodwork of the house, drawing-rooms and bedrooms are most appropriate in a flat, white finish, and in some instances a white enamel is preferable.

The woodwork of a hall looks best in walnut, or antique oak, in the dining-room and library, mahogany, red oak, or butternut, gives an appropriate finish.—Exchange.

* * *

Value of Automatic Sprinklers

SOME valuable information has lately been published which tends to show that the automatic sprinkler system as a means for fire prevention is of far greater value than is really supposed. It appears that for the twelve months ending October 31st the fire losses in the city of Boston for thirty fires in warehouses and manufacturing establishments equipped with automatic sprinklers aggregated only a little over $5700. or an average of about $190 per fire. Not one of the buildings or the property was valued at less than $50,000, and in fact the insurance on building and contents amounted to hundreds of thousands of dollars in a number of instances. It will be acknowledged, of course, that the type of the construction of the building has much to do with these highly satisfactory results, and their specialization in relatively large size risks under competent and single handed management, but that the sprinkler system was a leading factor in the low ratio of losses is indicated in still other information in the report of the business of the so-called mill mutual insurance companies. For ten years, with risks amounting to over $1,700,000,000, the fire losses of these companies have amounted to an average of 3.8 cents on every $100 of risk assumed since November, 1896. Contrasted with this figure are the records of stock insurance companies reporting to Albany, New York. During the year 1905 these companies wrote insurance to the amount of nearly $25,600,000,000. If their losses had been in the same proportion as those of the mutual companies the total would have been a little over $10,000,000 instead of an amount actually nearly ten times as great. The managers of stock companies state that their ratio of loss has varied in the past ten years from 39 to 52 cents, with an average of about 45 cents, while the average with the mill mutuals is less than one-tenth of this. This astonishing ratio exists notwithstanding the fact that the mill mutuals make a specialty of hazardous risks, such as cotton and woolen factories and knitting and pulp mills; and while, as stated, the relatively good results they have achieved is due in a measure to the fire resisting character of the buildings insured, it is also due to the installation of automatic sprinkler systems. A feature in this connection is, however, that the mill companies make it a point to inspect their risks periodically, with the result that they are assured that the fire protection systems are always in the proper condition for operation, and it is understood that so extensive is their system of inspection that the cost of it is greater than the amounts involved in their fire losses. The point to be drawn, says Carpentry and Building, is doubtless that automatic sprinklers are good, but supervision is as essential as installation.

Expert Supervision of Building with Reinforced Concrete Necessary

ALFRED O. CROZIER, of Little Falls, N. Y., writes to explain the reason for occasional failures of concrete and reinforced concrete buildings during construction and the method of preventing the failures. So few failures occur after the building is entirely completed, centers removed, concrete fully set and load put on that the number is negligible and gives additional strength to the position which Mr. Crozier takes:

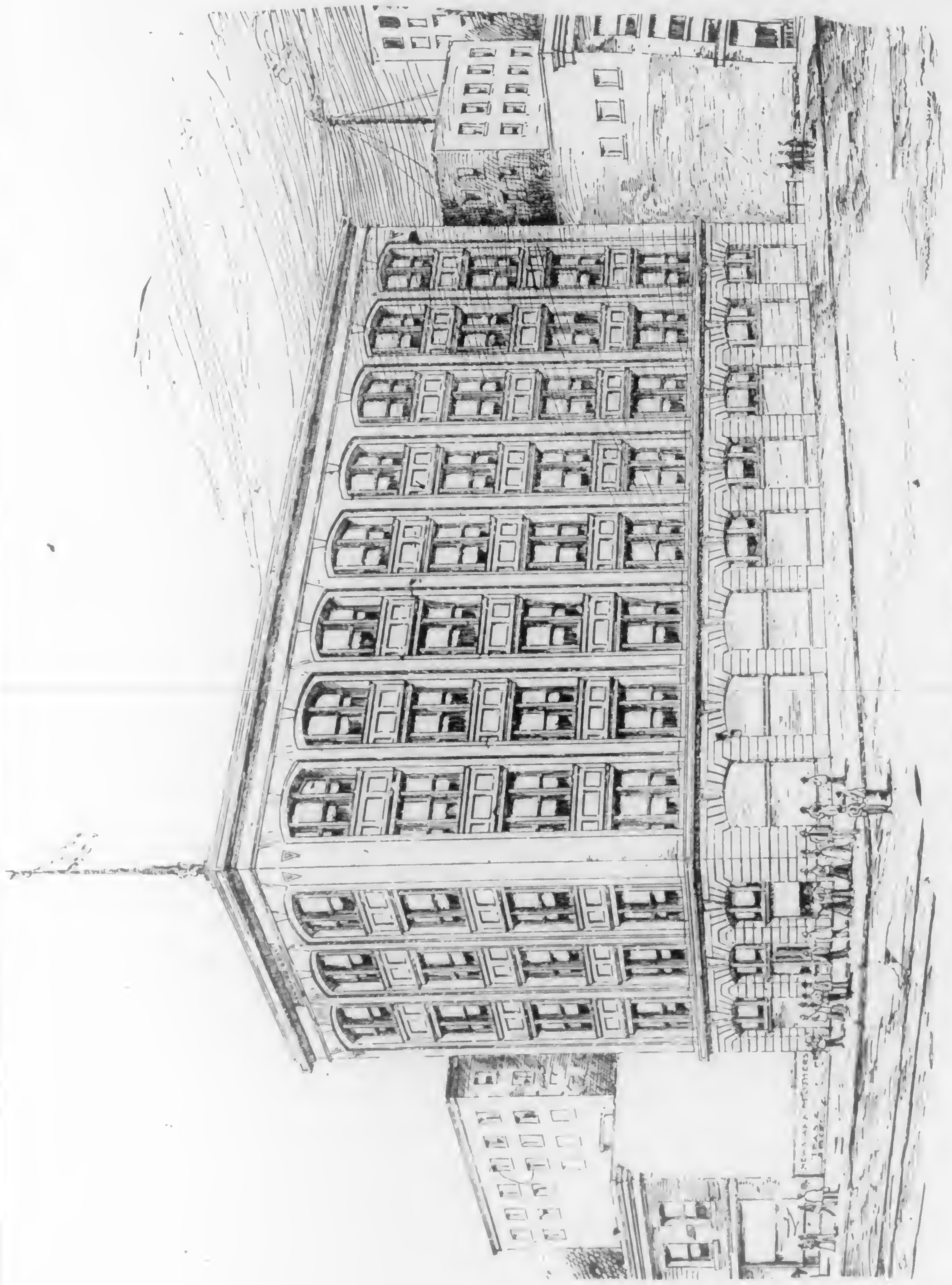
"The trend of public favor toward concrete is shown by the increase of the Portland cement production of the United States from 200,000 barrels in 1880 to 35,000,000 in 1905 and about 45,000,000 in 1906. Its superior fireproof character, greater durability and less cost and the advance in the price of lumber and skilled labor are factors which will cause the demand for concrete to continue its enormous growth. But the interest of the public and of concrete itself demands plain discussion of failures that their recurrence may be avoided.

"Most of the various 'systems' use individual steel bars or pieces—plain, twisted, corrugated or sheared—imbedded in the concrete for its reinforcement. If through false economy or ignorance insufficient steel for the load is used, or if the steel is put in faultily so as to leave one weak spot, failure is certain. This makes necessary the presence constantly of careful and thorough expert. It is impossible to find enough experts to man the multitude of big and little concrete structures now building. Consequently foolish economy puts much work in the care of novices, and with inefficient or careless inspection by public officials it sometimes results in accident.

"Concrete construction must be reduced to the same mathematical basis as steel and brick construction, with concrete-steel engineers or architects to prepare plans and specifications which any builder can read and follow without deviation, and thus obtain the infallible results in every detail desired and figured out in advance by the trained expert. The reinforcing members cannot safely be left to be laid in separate pieces in a haphazard manner by unsupervised and unskilled hands. These steel bars and rods should be fabricated together into structural units as in steel and brick construction, with sizes according to the load carefully figured out, so that with the least possible amount of metal a sufficient and uniform strength will be insured at every point throughout the entire structure. The engineer or architect doing this must have his draftsmen prepare one set of blue prints to guide the shop which fabricates the steel pieces into the designed reinforcing members, and another set for the builder, showing these various members suitably numbered, so they can be quickly set in their precise positions with relation to one another in the building, ready to be imbedded in the concrete, without the constant supervision of a trained expert. When the building is completed the steel therein is all tied together and each piece related to the others as scientifically as in a steel and brick structure and thirty stories can be built as easily and safely as one story. It will be superior, because the steel reinforces the concrete and the concrete reinforces the steel and protects it absolutely against the ravages of time.

"The only other method of concrete construction which seems suited to insure absolute safety and certainty is to form the ordinary wet concrete into bricks and blocks of desired sizes and shapes, with heavy automatic machinery, and when set or hardened and thoroughly tested, lay them up in the usual way.

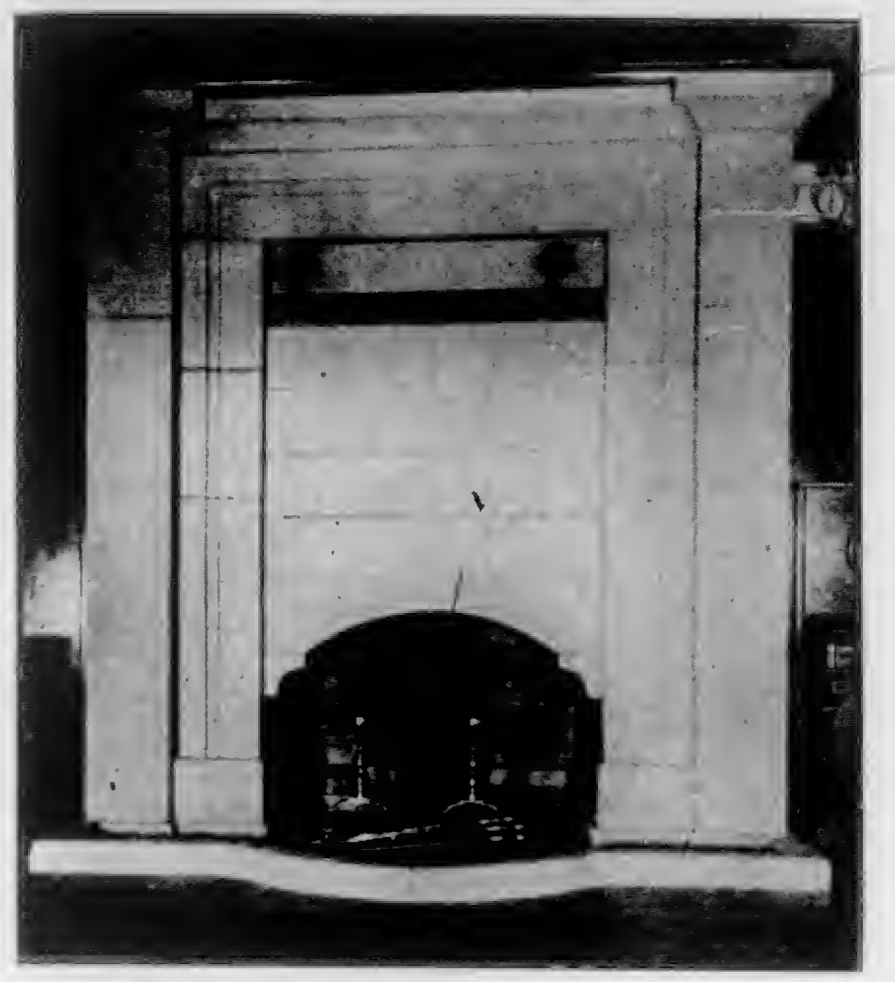
"This does away with expensive forms and delays incident to hardening of the walls and insures a more beautiful, uniform and impervious structure at much less cost.



Building for Newmark Brothers, Los Angeles. A. F. Rosenheim, Architect

The Fireplace a Neglected Part of the House*

By CARL ENOS NASH



Hall

LITTLE do we realize the unconscious influence of our surroundings. Harmony in the furnishings of the house promotes refinement and culture.

Perhaps the most important and most neglected part of the house is the fireplace. It is said that the best dressed men are those who attract the least attention. So it is with the fireplace. It should be so designed that it becomes part of the room—not strikingly conspicuous in its beauty nor glaring in its ugliness.

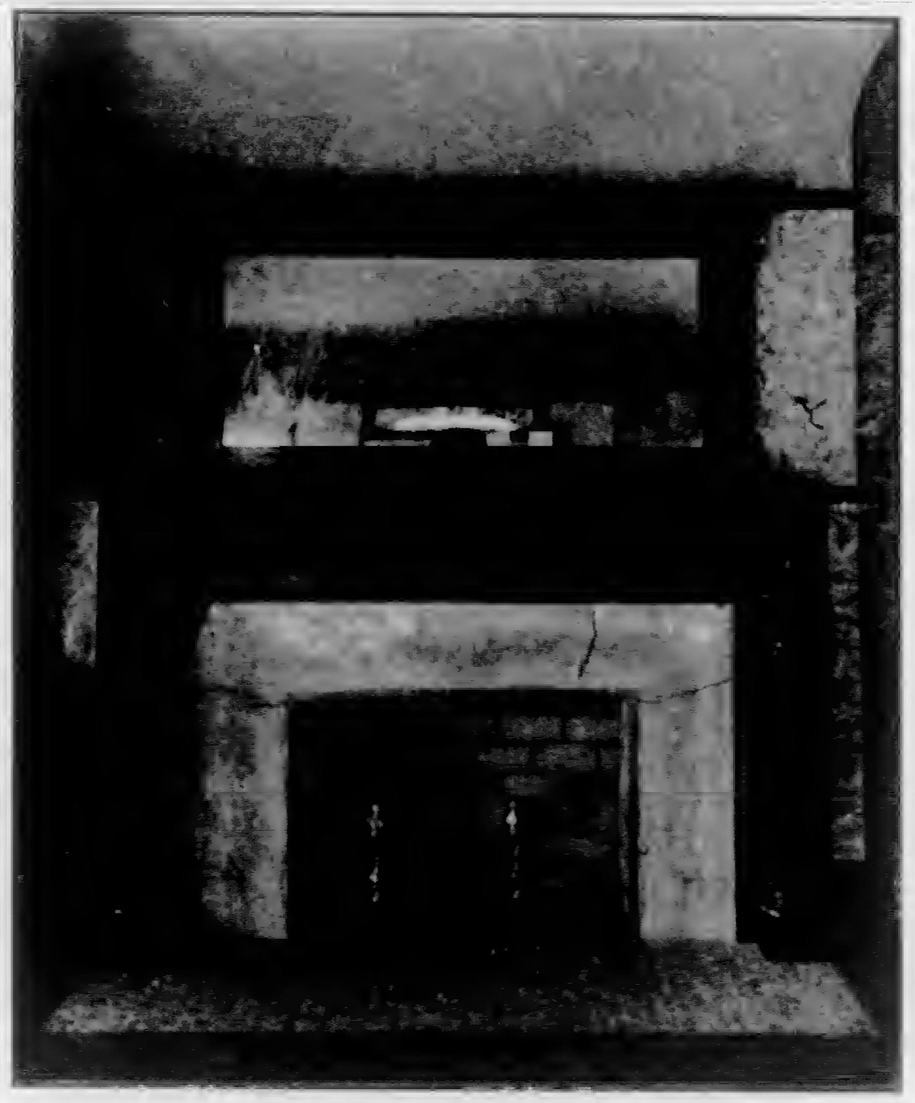
As we sit meditating, watching the leaping flames and listening to the crackle of the fire, what can be more conducive to perfect contentment than a well designed fireplace?

As we lounge before the fire in drowsy comfort what can be more suggestive of nightmare than a poorly designed fireplace.

The design of the fireplace depends upon the character of the room. It is impossible in this short paper to go into elaborate description of the various styles, therefore we can only make a few suggestions.

Let us first consider the hall as the first impressions are gained there. The hall as we consider it in our day is simply an entering place, not a place to tarry long. Therefore, the treatment may be rather heavy, stiff and conventional. Here large dull tiles, stone or brick can be used in the fireplace with good effect. The accompanying illustration is a large sand stone mantel, brownish gray in color and rather classical in line. The desert scene at the top is Grueby tile in soft browns and greens and pale blues. The hearth is in dull green tile.

The reception room or parlor should be dainty, and light; more formal than the living room but



Parlor

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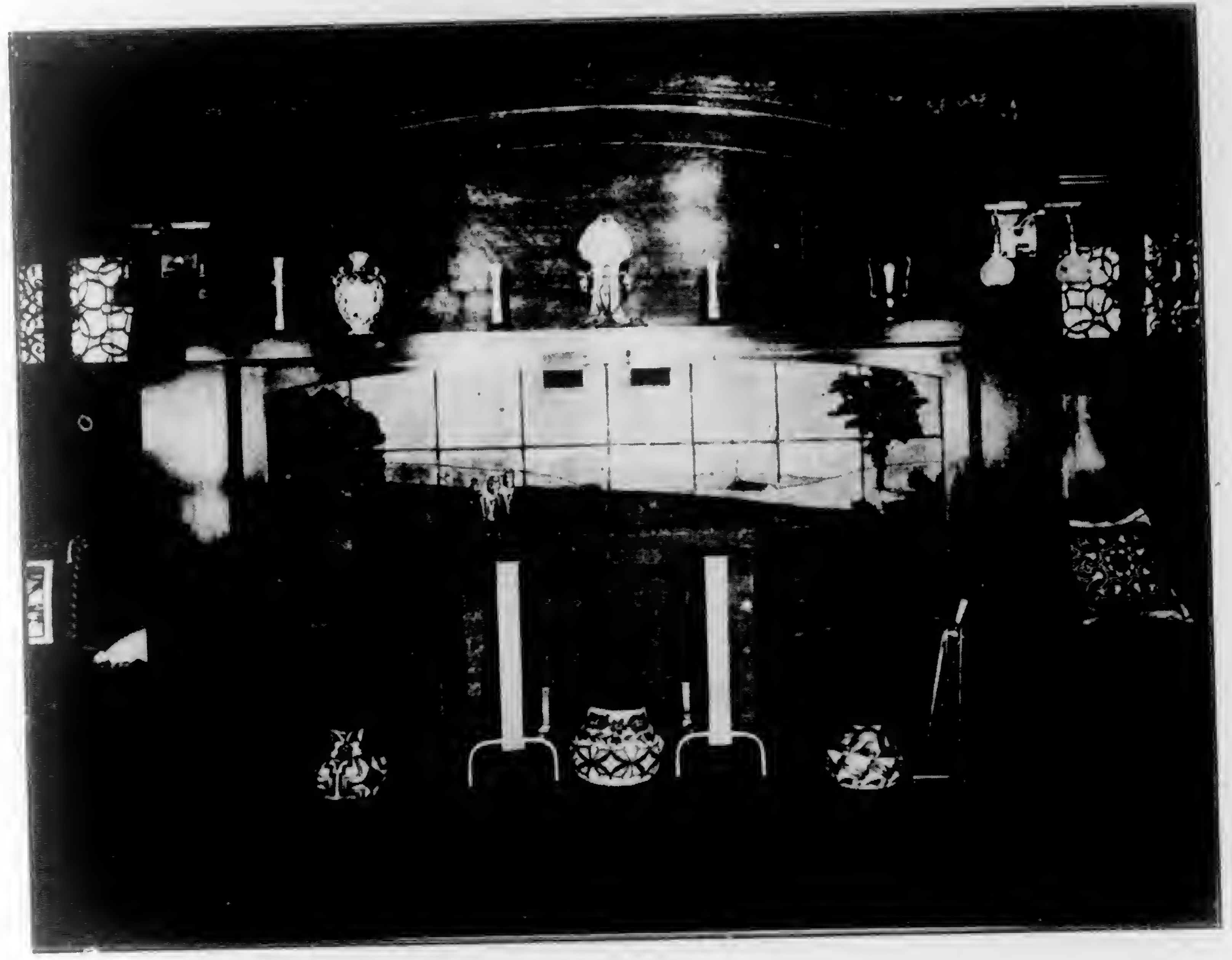
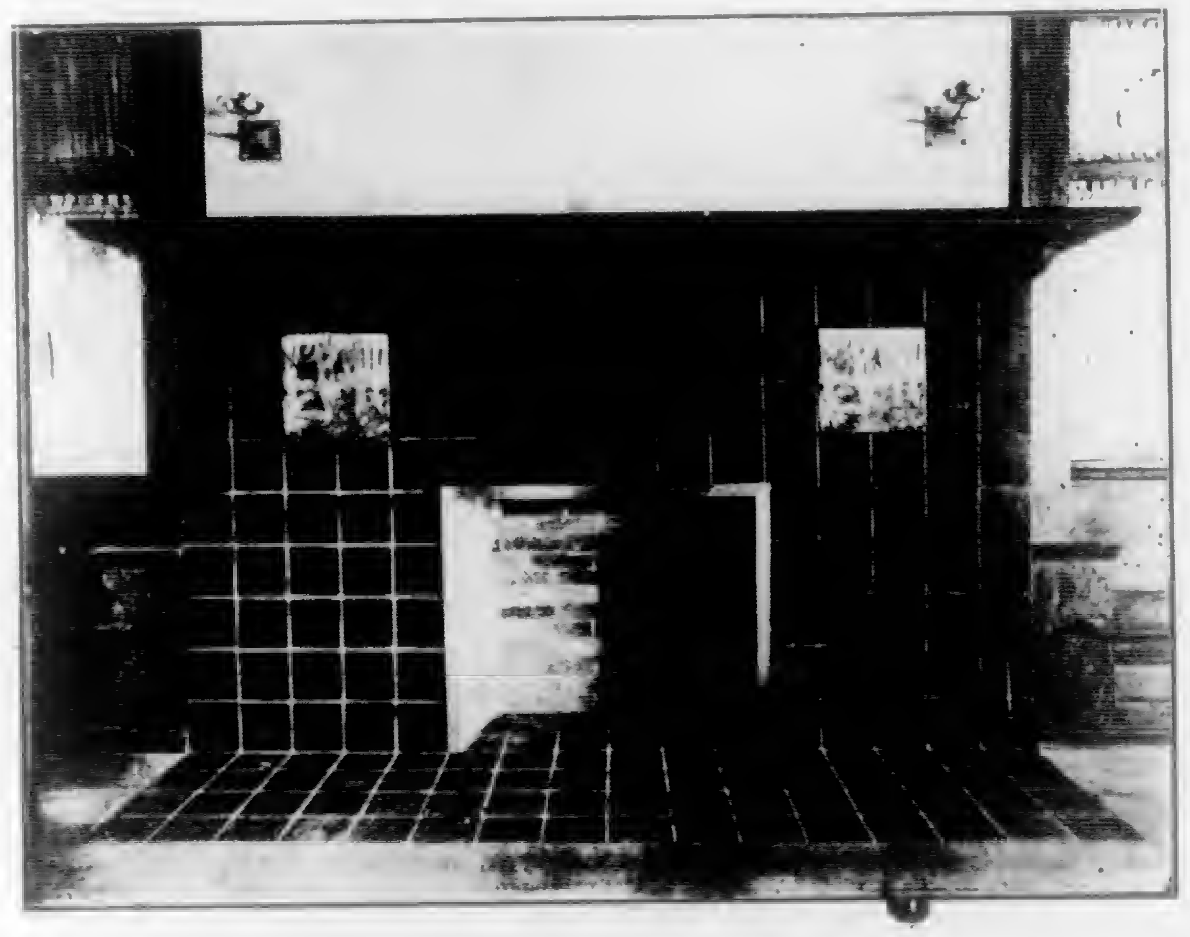
*The illustrations for this paper were all designed by the writer.

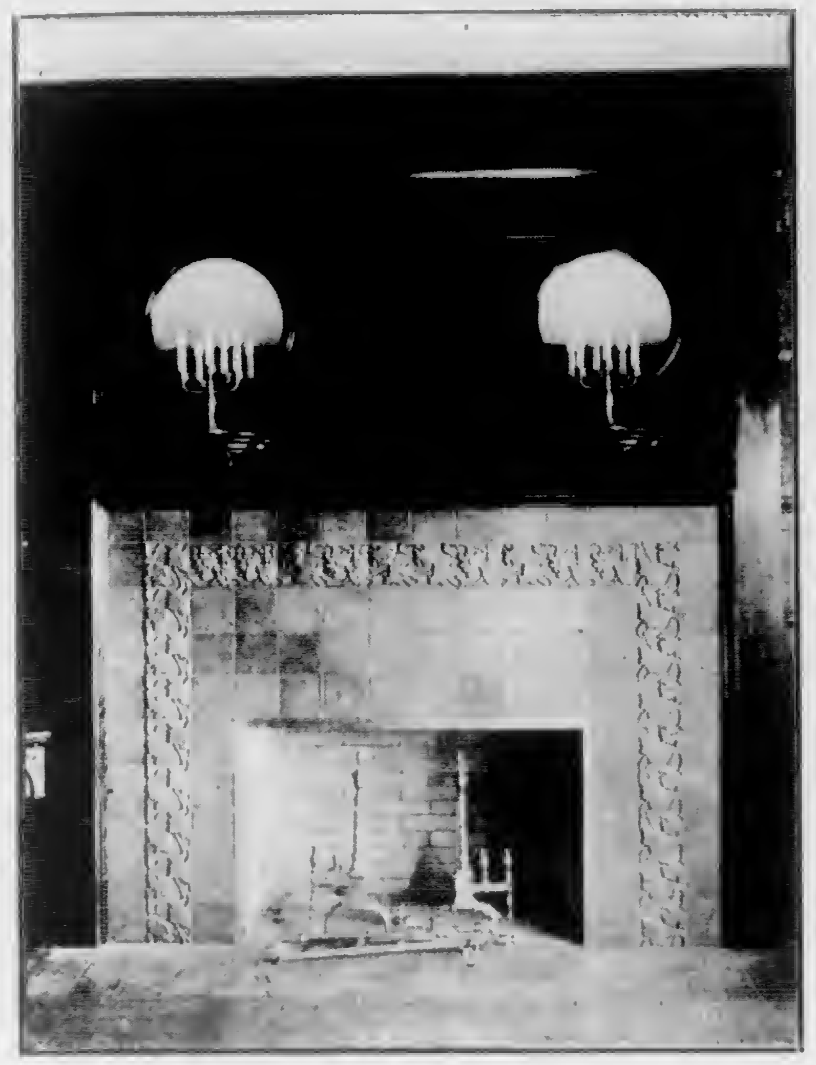


Living Room

none the less inviting. A heavy effect in the mantel is decidedly out of place here. Brick and stone should be avoided. The mantel in the illustration has a facing of Mexican onyx, soft in color and beautifully marked. The carving is cut by hand from the solid and is skillfully executed. The mirror over the mantel enhances the light effect and



Library



Dining Room

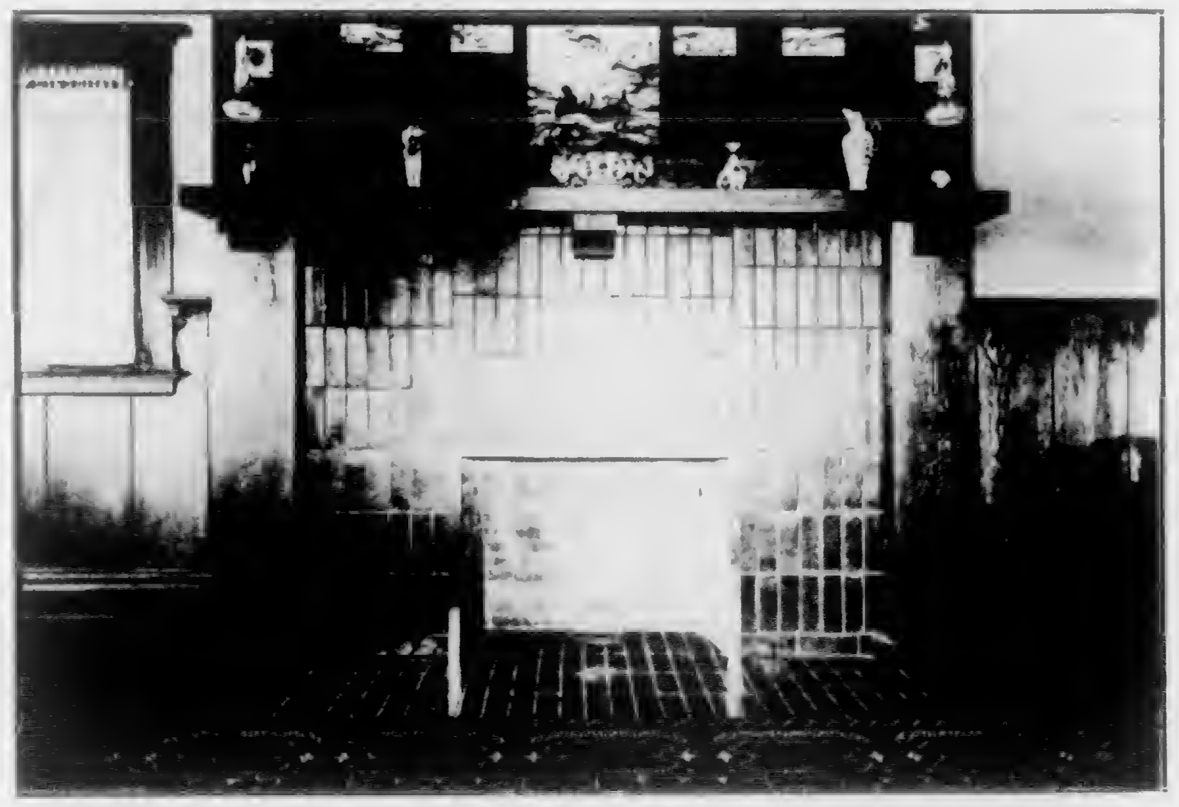
forms an excellent background for bric-a-brac.

The living room as the name implies, is where we live, and should be quiet and restful in treatment. The fireplace should be large and spacious. The mantel in the illustration has a facing of large twelve-inch tiles. The picture is a peaceful farming scene in restful colors. The body of the facing is in soft Grueby green. The hills in the foreground sparkle with sunshine while the hills in the background take on the blues and purples of distance.

These tiles were executed by the Grueby Faience Co. of Boston from the designs of the writer.

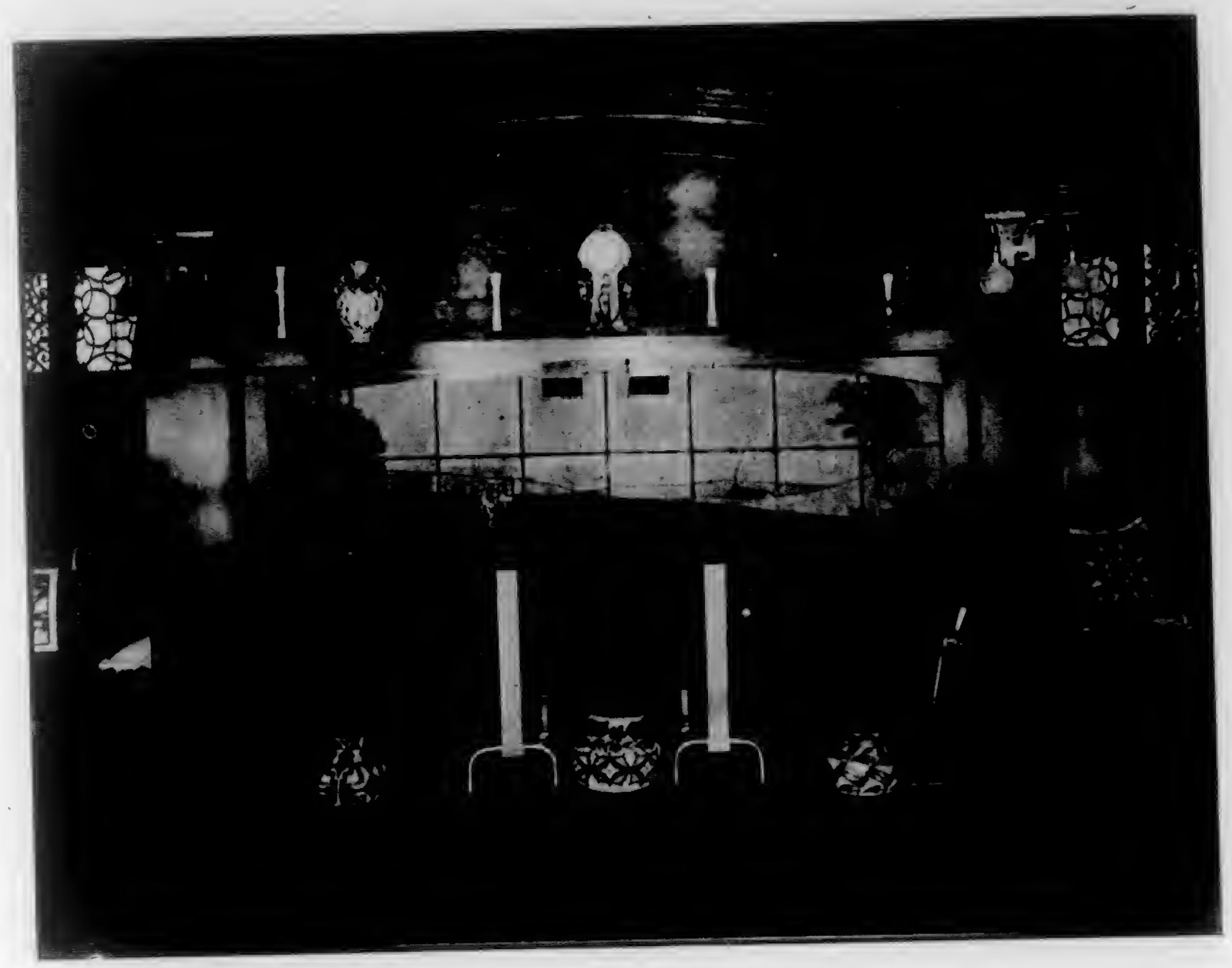
The living room treatment applies to the library—quiet and restful. The ornamental tiles in the library illustration suggest the jungle and add a pleasing touch of color to the otherwise plain facing. The tiles are mitered at the corners and return to the wall about six inches.

The dining room assumes more the aspect of the hall, but should be less stiff and conventional. The mantel should not be as heavy in treatment as the hall. The illustration shows a facing of plain green Rookwood tiles and an ornamental border of grapes and vines in three colors, modeled well in relief.



Billiard Room

The billiard room and den should be less formal than any of the other rooms. The panels above the mantel here shown are in glass mosaic, rather striking in color but toning in nicely with the green of the woodwork.



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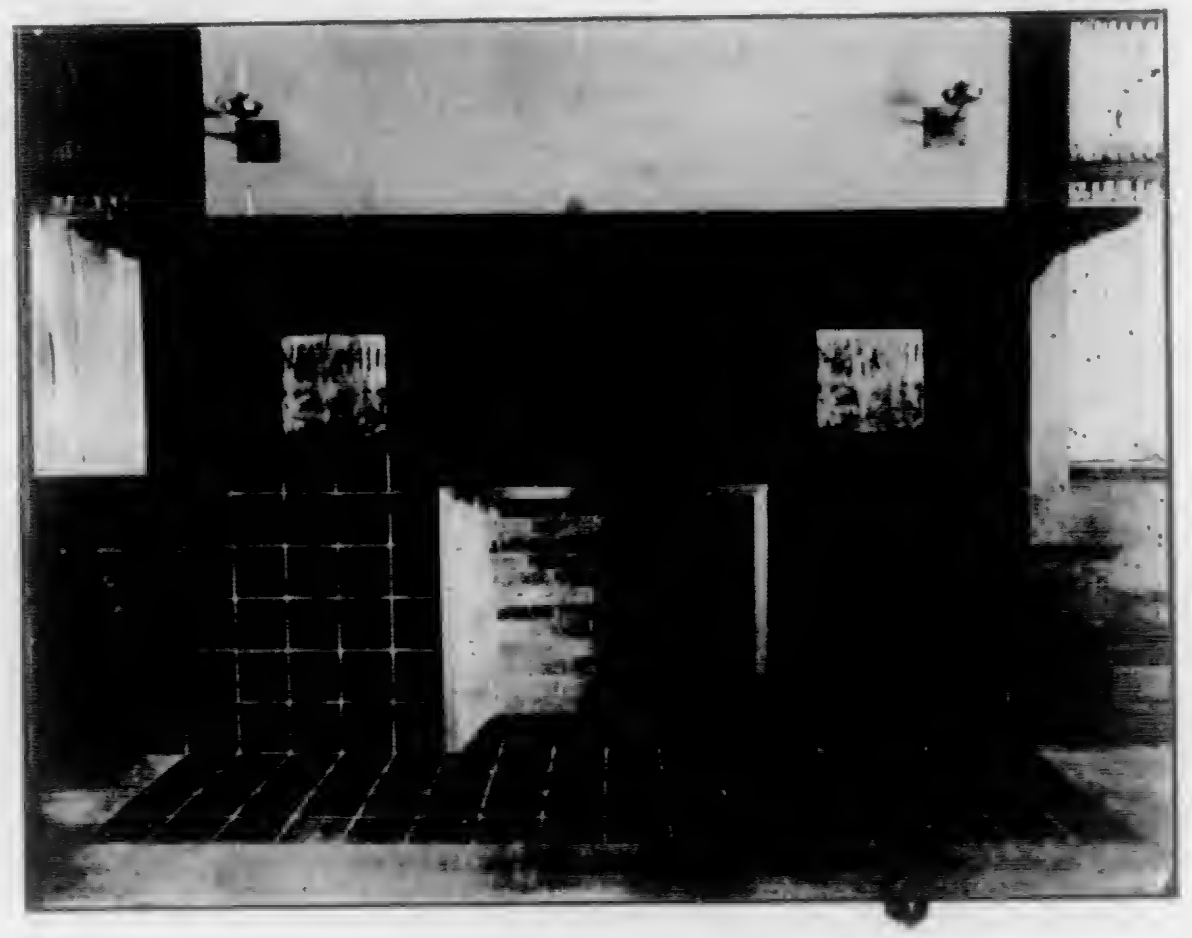

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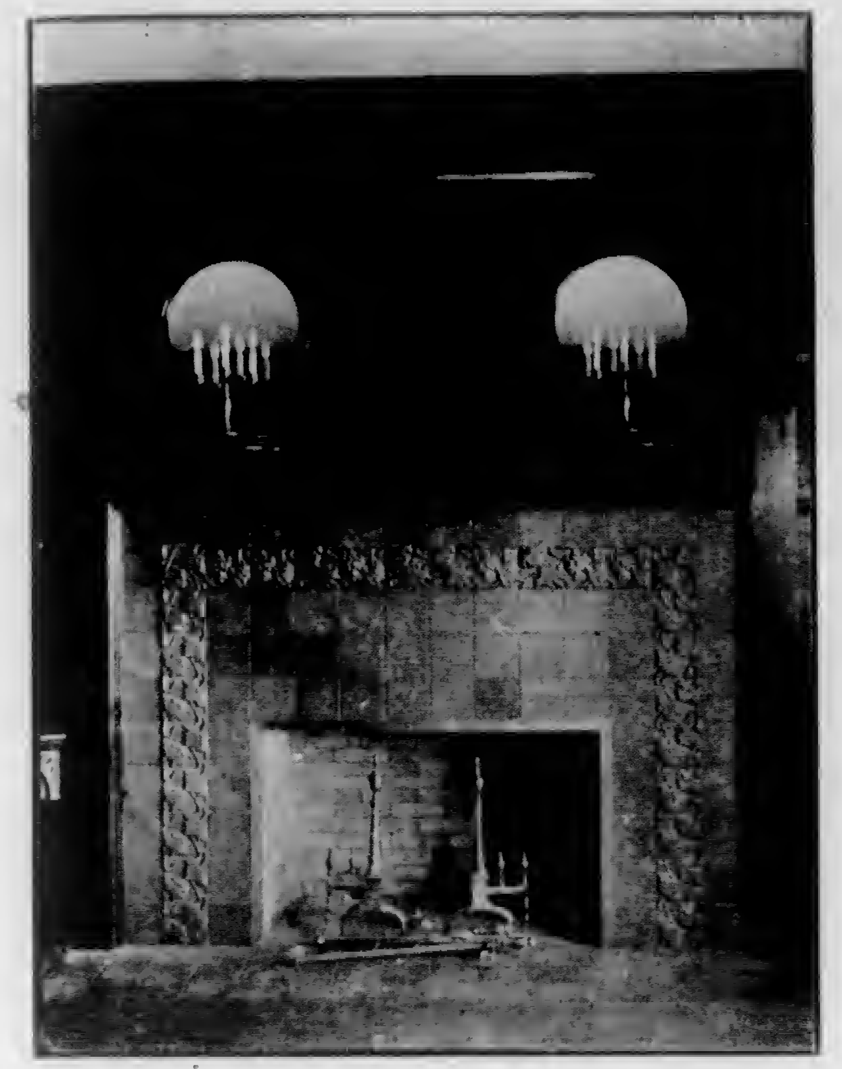

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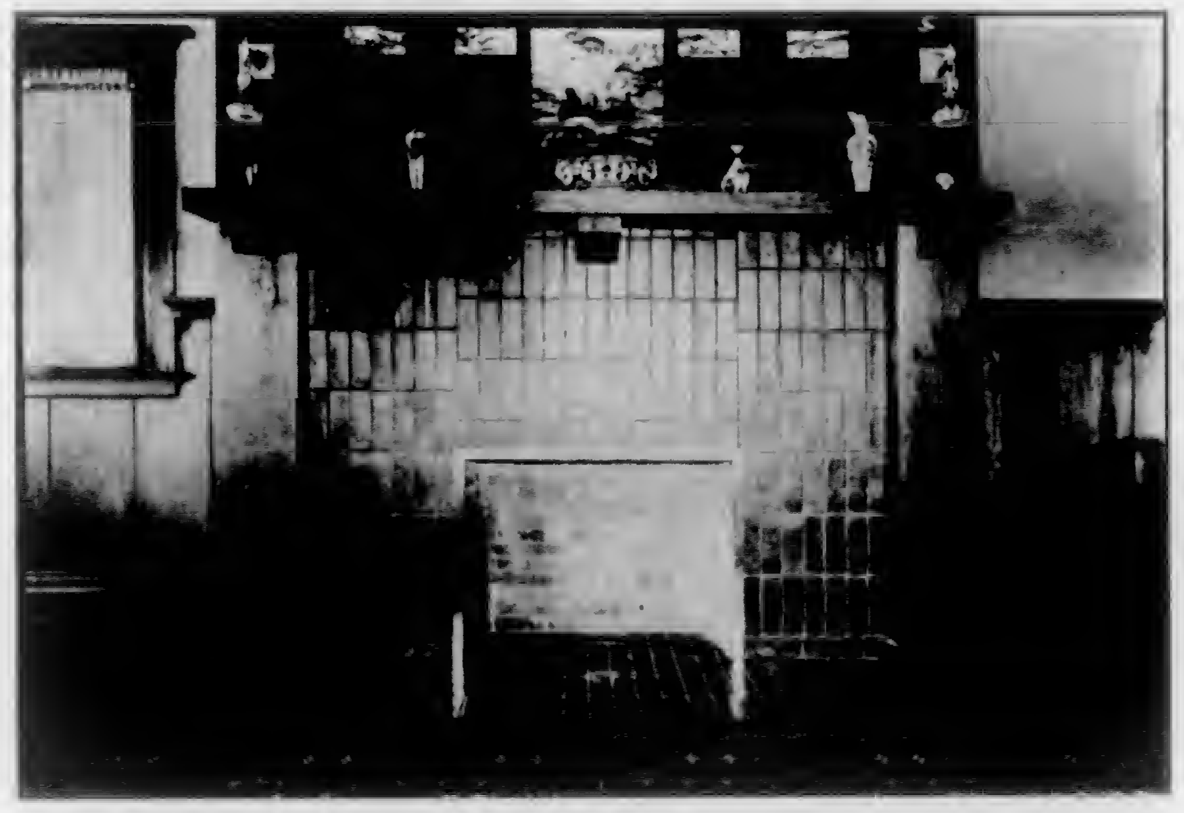

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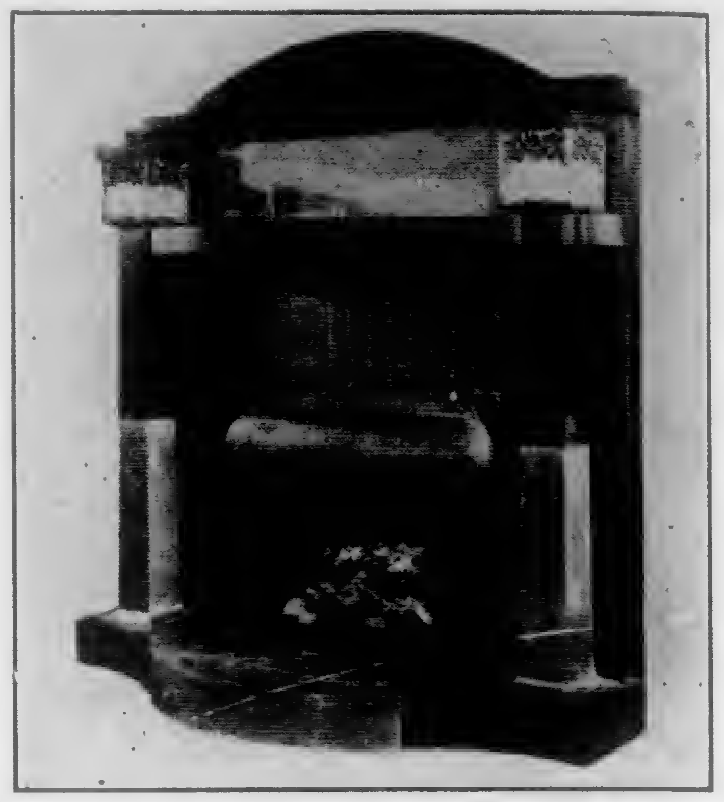
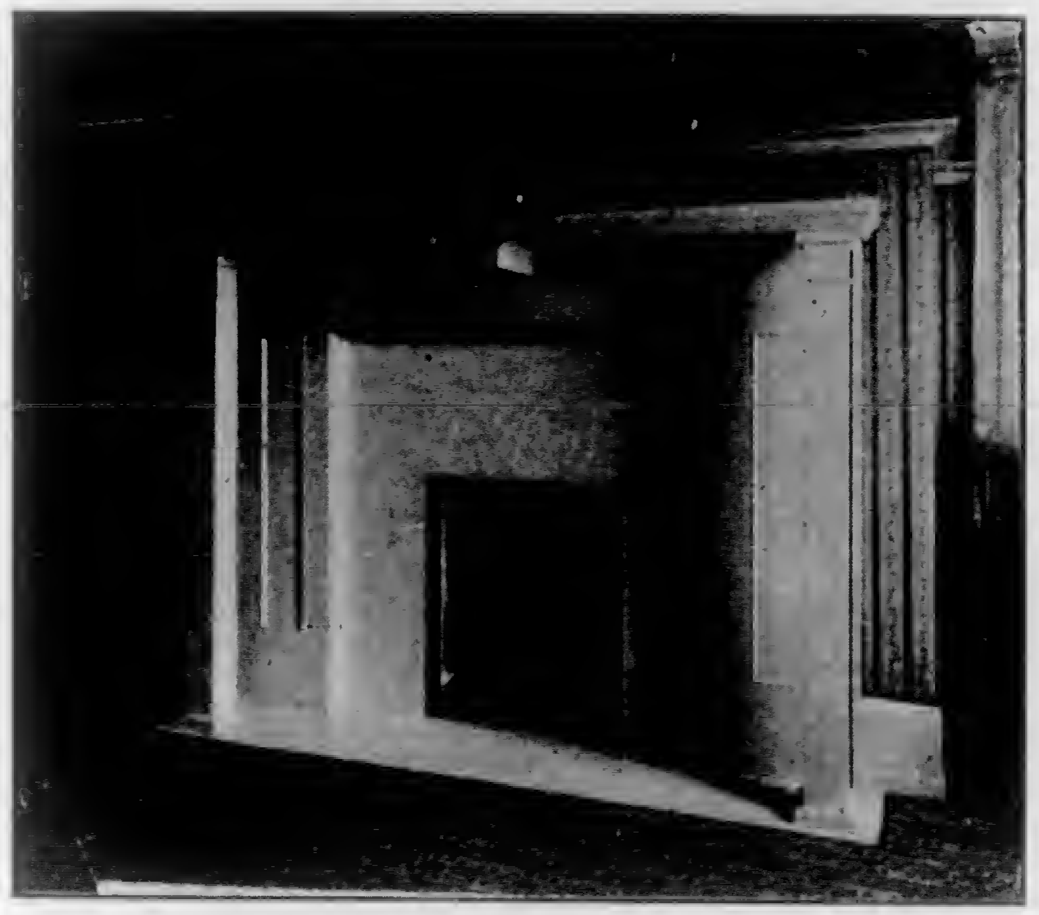


Den

The den mantel illustrated is in mahogany, natural color. The base of the posts, the hood, and the hearth rail are beaten copper, natural color. The peafowl in the upper panel is executed in tile. On either side of this panel at the top of the posts are electric lights.

The bedroom is quite as important as any room in the house. There is more expression of individuality here than in any other room. It should be bright and cheerful in winter and cool-looking in summer. The illustration shows an attractive bedroom mantel, very simple in line but pleasing.

We have approached the subject of fireplaces only in a general way, but these suggestions may be applied to the various styles and periods.



Bedroom

Hollow Tile Has Stood the Test

Hollow tile was first used in this country in the Vancorlear flats, New York City, erected about thirty years ago, says an exchange. It was the first tile of that style made in the United States. The experiment was successful, and in 1877 there were 100,000 tons of hollow tile fireproofing material sold in the United States. Today, the output exceeds 2,500,000 tons a year, a plant at Perth Amboy alone having a capacity of 20,000 tons a month.

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American Institute of Architects

(ORGANIZED 1857)

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First National Bank Building

The First National Bank has made application for a permit to erect a twelve-story reinforced concrete building at the northeast corner of Montgomery and Post streets, San Francisco, at a cost of $800,000.

There was at first some difficulty over the granting of the permit, as Chief Building Inspector Horgan, to whom the plans were referred, was governed by the ordinance which prohibited the erection of a building exceeding in height one and a half times the width of the streets it fronts upon.

At a recent meeting of the San Francisco Supervisors, however, it was voted to revoke the limitation and in the future there will be no restriction on the height of a building in the business section.

Other applications made the past month were by Annie M. Regan for a permit to erect a three-story brick building at the southeast corner of O'Farrell and Powell streets at a cost of $130,000; Sanford Sachs to put up a building to cost $117,500 in Geary street near Grant avenue, and M. Flood to expend $108,000 on a new building in the west side of Polk street near Ellis.

$1,000,000 for Almshouse

Architect William H. Mooser has been appointed to draw plans for the new City and County Hospital to be erected in the Almshouse tract under the bond issue. Mooser has been given four months' time to complete the plans and he will receive 3½ per cent of the estimated cost of $1,000,000, or $35,000, for his work. City Architect Shea will receive 2 per cent, or $20,000, for supervising the plans.

The building committee of the San Francisco Supervisors has been instructed to ascertain how soon the plans for the new school houses will be finished.

San Jose Church

There is a hitch in the plans for the new First Presbyterian church in San Jose. It was announced some weeks ago that J. Cather Newsome's plans had been accepted. This appears to have been an error, as the church people say no decision has been reached. A mission style edifice to cost about $12,000 is planned. Dr. C. K. Fleming of San Jose is a member of the building committee.

Masonic Temple for Fresno

The Fresno Masons have decided to erect a temple, and competitive plans have been submitted by Architect H. F. Starbuck, of the Macdonough building, Oakland. The building will be patterned after the Santa Rosa temple, which was designed by Mr. Starbuck. It will be of brick, three stories, and will cost about $45,000. The final plans have not yet been approved.

Mills Building

The reconstruction of the Mills Building at the corner of Bush and Montgomery streets, San Francisco, has begun. This is a ten-story structure which it was at first supposed would have to be largely removed, but a careful examination discloses the fact that practically all of the steel frame can be used again and that a good portion of the brick walls are in good condition. The building will be fitted up as before as a modern office building.

San Jose Labor Temple

Articles of incorporation of the Labor Temple Association have been filed in San Jose, giving legal form to the local movement to erect a large structure in this city to cost probably $100,000, which is the amount of the capital stock. The directors are E. J. White of Santa Clara and John Standley, R. L. Telfer, F. J. Hepp, H. S. Burlingame, D. W. Gish and John F. Mecklem, all of this city.

Proposals Wanted

Treasury Department, office of the Supervising Architect Washington, D. C., March 4, 1907.—Sealed proposals will be received at this office until 3 o'clock p. m. on the 8th day of April, 1907, and then opened, for the extension, remodeling, etc., including plumbing, gas piping, hand elevator, heating apparatus, electric conduits and wiring of the U. S. Post Office and Court House at Denver, Colorado, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the Custodian at Denver, Colorado, at the discretion of the Supervising Architect. James Knox Taylor, Supervising Architect.

May Have New County Buildings

Architect W. R. Miller, of Oakland, has been employed by the Alameda County Supervisors to estimate the cost of erecting a new court house and other buildings. A report will be made to the Supervisors probably today. Mr. Miller expresses the opinion that Alameda County should at once follow the example of Los Angeles and erect entirely Courts should be erected on the east

"It appears to me that new public buildings should be erected here, and that the courthouse should be constructed on the site of the present Hall of Records. The old buildings should be torn down and new ones for the accommodation of the Supervisors, the Auditor and the Treasurer should be erected on the west side of Broadway. The Superior Courts should be erected on the east side of Broadway, and with them should be the offices of the County Clerk. The latter office is the only one in the present buildings that is in any way modern, but it should be constructed in connection with the Superior Courts. All the offices through which money is paid out or received should be constructed on one floor, and this I believe can be done by moving them to the west side of Broadway, as I have suggested."

Redwood City Court House

Six plans have been submitted in competition for the new court house at Redwood City by the following architects: Martens & Coffey, Glenn Allen, McDonald & Dean, Diamond W. Mohr, Will D. Shea, all of San Francisco, and Preston Seehorn of Los Angeles. No selection has been made as yet.

An Armored Building

One of the strongest structures now being built in San Francisco is the Viavi building on the north line of Pine street, extending easterly from Stockton street. Dr. Hartland Law and his brother, Herbert E. Law, are the owners. The building will be of the Spanish style of architecture, both within and without. It is of reinforced concrete throughout, and, in order to make it extra strong, there is fully double the quantity of steel rods in the walls, columns and girders which is ordinarily used in Class A buildings, in fact, the net work of steel is so extensive that it is in reality an armored building. The slope of Pine street is such that at the easterly end the building will be three stories in height, the top of the third story being level with Stockton street. On this will be a one-story superstructure, with arched windows on all four sides and glass dome roof, its elevation and red tile cornices making it prominent above all the surrounding structures. For the purposes for which it will be utilized it is to be complete in every detail. The rear portions of this structure have been built into the solid rock of the hill, and there are two spacious fireproof vaults in the hillside, with front facing the interior of the building. The cost will be something over $125,000, and it will be completed early in the summer.

New Transport Docks

The quartermaster general has appointed Howard C. Holmes consulting engineer to act with Captain B. Frank Cheatam, consulting quartermaster at San Francisco in the building of the new transport docks at Fort Mason.

Captain Cheatam and Holmes held their first meeting at the Presidio to discuss the plans which the Government has had prepared by a firm of architects in Philadelphia. The main feature of the new docks is to be a breakwater or seawall 100 feet in width, which will be run out directly north from the foot of Laguna street, near Beach street, and extend 700 feet into the bay. On this will be built a roadway and railroad track, and on the east side two piers will be built, running easterly, 100 feet in width, and separated by an interval of 200 feet. This will provide absolutely safe dock room for three transports, and a fourth may be docked on the north side of the outer pier when occasion requires.

The construction throughout will be of the most durable character. The breakwater will be of stone and the superstructure of the piers will be of indestructible material—steel and reinforced concrete. They will rest either on steel piling or on concrete cylinders, such as have been used here with much success.

A force of draughtsmen is at work at the Presidio on the plans, but it is stated that there is much preliminary work yet to be done before actual construction work will be begun, as the plans drawn in Philadelphia are of doubtful value.

Changes in Palace Hotel Plans

Several important changes in the plans for the new Palace Hotel have just been decided upon. The main entrance is to be thirty feet in width and it will be on Market street, where the old main entrance was located. Instead of the office being placed back toward the south end of the building, as formerly, it will be located close up against the New Montgomery-street entrance. The latter will have a carriage drive in form of a half-circle, as was the case before the fire. The office will take up part of the space formerly devoted to the barber shop, the rooms of the Transportation Club and the east end of the court.

The structure is to be nine stories in height and the new palm garden or court will be larger than the old one. Its glass roof will be placed at the second story, instead of at the top of the building, as was the case before the fire. This will have the effect of making all the rooms about the second story outside rooms, with plenty of light and air. Another innovation is the decision to have two large ball-rooms instead of one. The grill room and ladies' cafe are to be on a much larger scale than formerly. Stores or offices will take up most of the ground floor along Market and New Montgomery streets, as was formerly the case.

Spokane Building Notes

Spokane, Wash.—M. S. Bentley announces he will erect a three-story business building, 50x140 feet, at Third avenue and Post street, to cost $30,000. It will be of white pressed brick, fitted with modern appliances and electric elevator. It will be occupied by the Northwestern Business College.

J. P. O'Brien, vice-president and general manager of the Harriman lines in Washington and Oregon, announces that the Oregon Railroad & Navigation Company will begin work within 90 days on improvements on the Jenkins tract, north of the Spokane river, where the warehouse district will be established at an expenditure of $216,000. Six warehouses, each 100 by 160 feet, platforms, trackage, and switch lines will be built, the latter to connect with the main line. The warehouses will be built by contract and bids are to be invited within 30 days.

Improvements costing $30,000 will be made at the Kaiser Hotel, Main avenue, Charles J. Kapps announcing that an additional story and an annex 57 by 50 feet, will be built at once. The present structure is 50 by 85 feet, three stories high, and was built last fall at a cost of $28,000. The enlargement will give the hotel 150 rooms.

Concrete Freight Depot for Fresno

The Southern Pacific Railroad Company is planning extensive improvements at Fresno, Cal., at an estimate aggregate cost of $100,000. The freight yards are to be enlarged and it is said that a new freight depot will be erected of concrete.

Order Repairs to Schools

The Oakland Board of Education has approved a report of the schoolhouse committee which calls for $50,000 to be expended in repairs on the Washington, the Franklin and the Prescott schools, which were damaged in course of construction by the earthquake.

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HAVE YOUR WORK INSPECTED

The necessity of inspection of materials and workmanship used in construction, cannot be too strongly urged at this time when so much building is being done, and such a vast amount of old material is lying about to be had almost for the asking. Hundreds of tons of old steel beams, columns, etc., most of which have been very materially weakened and some of them damaged beyond hope by the fire and the temblor, are now being hauled to various shops or storage-yards, and some of it cleaned of rust, straightened and painted, with a possible intention of turning them out again as new material. To one not familiar with this class of work, it is almost impossible to distinguish it, by the outward appearance, from first-class material, but if subjected to proper inspection and tests, by those skilled in this line of work it will be found wanting in most cases, fit only for the junk-pile in others, and should by no means be put back into a building where it may endanger the lives of a great many people and cause great loss. This kind of work is known to have been done at various times before the fire, on buildings, in and around San Francisco, and the inducements now are certainly greater than ever, with the hardships experienced, and uncertainty of getting new material.

A great many owners or concerns, about to build, when approached on the subject of inspection, simply reply: "See my architect, he has entire charge of the work." It is almost useless, in many cases, and a waste of time to see the architect, as many of them appear, in a way, prejudiced against inspection, and seem to think if their work is let to a so-called "reliable" concern, everything is sure to be all right. The percentage of architects, in these parts, who consider inspection, and see that their work is properly inspected, is very small, but they number among the best, and their work is their strongest advertisement. Others do not have, as a general thing, any one to look out for poor material or workmanship at the place of manufacture, but simply oversee the work in a general way in the field, during erection, and many of them do not even do this.

The writer has in mind an instance which happened some time ago in one of San Francisco's well-known structural shops. In building some columns and girders for the steel frame of an office building, certain parts of the workmanship were very poorly executed. The inspector insisted on having the work done properly and referred to the specifications, whereupon the shop-owner replied: "Why, we never looked at the specifications; I don't think we have any, we always do our work the best way we know how, and think that should be good enough for anyone." This remark after 80 per cent of the work had been fabricated! The statement was later made in the office of the architect, who had previously furnished the specifications, and he can vouch for its accuracy.

Another instance might be mentioned where a modern steel frame sky-scraper was put up, and the erection superintended by a local firm of well-known architects. After the steel frame was up and finished, the owner came to the conclusion that it might be a good idea to have an inspection made of it. This was accordingly done, to somewhat of a disadvantage, as all the staging and scaffolding had previously been removed, but there were found to be about 1000 defective rivets, 85 per cent of which were loose, 500 open holes from which rivets had been omitted entirely, six girder to column connections, from each of which 70 per cent of the rivets had been omitted, several columns $\frac{1}{2}$ inch out of plumb in 30 feet, 30 per cent of the columns in wind from $\frac{1}{8}$ inch to $\frac{3}{4}$ inch filler plates omitted, broken connection angles, etc. To correct this work and put it in the best condition possible, under the circumstances required the services of six men three weeks, and held back the other trades just that long. I might add that the erector of this steel claims to be equipped with the most modern appliances and up-to-date methods of handling same, and tried to make it appear that the work was first-class in every respect. Throughout the older parts of the country, there is scarcely a structure of any size erected in which all materials used in the construction are not thoroughly tested and the workmanship inspected in every detail, and I firmly believe the same state of affairs will prevail here in the near future, when architects and engineers in general become more thoroughly acquainted with the errors made and poor workmanship turned out at times by the different shops, through the carelessness or neglect, as the case may be, of superintendents or incompetent workmen. Good workmanship by competent labor neither costs more nor requires more time. The only requisite is care in preparing in shop details and specifications and the employment of competent and honest inspection by the owner to see that he gets what he pays for—nothing less.

E. O. RITTER.

NEXT CONVENTION IN CHICAGO

On the return of the delegates and members of the Illinois Chapter from Washington, steps were taken to secure the influence of the Western chapters for Chicago as the next meeting place for the A. I. A. A letter rehearsing the claims and advantages of that city was sent to these chapters with the request that they petition the Board of Directors of the Institute to select Chicago for the next convention. It is regarded as certain that the Windy City will be chosen.

The Chicago idea for the next convention is to depart radically from the rather luxurious program that has prevailed at the recent meetings in Washington, however enjoyable and advisable these may have been. Chicago has an established record as a generous host, and is in the position to advocate a return to simplicity when this seems most desirable, as at present. Many important reports and questions were continued from the last convention and these will have final action at the next meeting.

CHEAP PAINTS

In an analysis of samples of paints made by the Experiment Station at Fargo, North Dakota, we learn that all packages of white leads and bogus leads tested fall short in net weight, most of them by 10 per cent or more. Several brands of ready-mixed paints appear to be not only honestly made of good goods but of full weight and measure. In great contrast to these are numerous points put out by catalogue or mail-order houses. One big Chicago house puts out a paint the liquid part of which contains as high as 24 per cent of water and is 15 per cent short in volume, while another big Chicago house is a close competitor for the swindling badge. Perhaps this will be carried off by a St. Louis house, which makes paints "especially for the job to be painted," comments the Western Architect.

A can of this tailor-made paint, size 3.37 quarts, contained 2.42 quarts of materials—and such materials! Of the liquid part 11.8 per cent was water, the balance mostly a very poor quality of linseed oil. No white lead appeared in the colored part, the ingredients of which are mainly selected for their cheapness. This bulletin is a good one for architects to have on file.

WOULD TEAR DOWN THE PROFESSION

There are legitimate fields for engineer-construction companies and architect-contractors but the planning and erection of buildings independently of professional service solely in the interest of the owner, is not one of them.

It would be to the public interest if all high-class construction work were handled by such combinations or companies, but, as constructing contractors, merely, the influence would be toward cleaner contract business and better construction. The practice would conduce to elevate the engineering and architectural professions having to plan and supervise such work in client's interests.

Professionally-competent contractors, whether individuals or companies, very properly submit plans prepared by their engineers or architects, by which they would propose to carry out works, or erect buildings or engineering constructions, under contract, for owners who have professional men separately engaged to advise them and otherwise safeguard their interests. But when such companies or amalgamated people represent to owners or allow owners to conclude that it is a useless expense to employ an architect or engineer, seeing that they stand ready to furnish plans as well as to build for them, their first move is to tear down the profession which is the very corner-stone of their alleged extra worth over the ordinary contractor, whom they, at the same time, belittle. Thus, on the one hand, they place themselves, professionally, in the shoes of fakirs, and, on the other hand, they minimize the value of the practical side of their being.

It is much to be regretted that some good and worthy engineers and architects seem to be blinded to the inevitably disastrous outcome of this course. Their fellows who are still loyal to their professions in the interest of owners and the public should reason with them, and property owners and the public should, in their own interests, help to the end in view, the saving of technical employments from the grasp of mere commercialism.

MORE FIRE-PREVENTION NEEDED

An impetus to self-protection against fire is the significance of the past year—so says a writer in the last issue of Fireproof Magazine. Insurance companies have had to realize that their capacity for providing indemnity was taxed to the breaking point and fire departments have been compelled to admit their inability to protect life and property, once a fire reaches a certain stage. With these two agencies no longer capable of assuring the property owner the security he needs, he is forced to, whether he wants to or not, fall back on his own resources. He must protect himself. In constructing new buildings he must make them virtually undamageable by fire, he must build of steel protected with brick and hollow tile; he must have wire glass in his windows; he must close off his elevator and stair wells so as to make substantially separate buildings of each story and he must use the maximum of incombustible materials in the fitting and furnishing of his building.

But that only applies to new buildings. For instance, there are in New York but 2000 structures that can be classed as incombustible and about 293,000 others, that are more or less fire-traps, with which to deal. That is the problem that confronts us. To safe-guard those buildings to at least a moderate degree is an engineering problem that taxes the ingenuity and skill of our greatest fire-prevention experts. The International Building Inspectors' Society has issued much data upon the subject and is at present at work upon the State Legislatures with a bill to compel people to minimize the fire danger in old buildings. The Society's contention is that no man is justified in maintaining any construction that endangers the safety of his neighbors' property and that it is the State's duty to make him eliminate that danger to as great a degree as possible and the Society's experts have formulated a scheme for the re-vamping of old buildings that means the maximum of protection at the minimum of cost to each individual. As things are now our fire waste is costing us in the neighborhood of $2 per capita per year. In Europe the cost of fire averages but about 30 cents per capita. Incidentally, the entire cost of operating some of our municipalities only reaches six or seven dollars per capita, from which figure it may be seen what a grinding tax fire has become.

Southern California Chapter, A. I. A.

The regular monthly meeting of Southern California Chapter A. I. A. was held at Levy's March 12th.

A committee was appointed to investigate and report on the advisability of incorporation, in order that the Chapter may handle its real estate and undertake to improve it with a building.

The Architectural Club received the endorsement of the Chapter for their proposed exhibition of competitive designs which will be exhibited in this city during May. It is expected that some of the work shown at the big exhibition to be held at Chicago in April will be forwarded to this city to help along the local exhibit. Leading members of the profession in San Diego, Santa Barbara and other points in Southern California will participate.

The presiding officer at the meeting was Architect Alfred F. Rosenheim, and Architect Fernand Parmentier was present as secretary. Other members at the table were Architects R. B. Young, George H. Wyman, Julius W. Krause, Thomas E. Preston, Octavius Morgan, John P. Krempel, Frank D. Hudson, Timothy Walsh, Elmer Grey, Theodore Eisen, Percy Eisen, J. N. Preston and G. A. Howard, Jr.

The Publisher's Corner

Suction Sweeping Plants in Demand

The suction sweeping plants being installed by the Sanitary Devices Manufacturing Company in nearly all the new office buildings, hotels and apartment houses on the Pacific Coast, are giving perfect satisfaction.

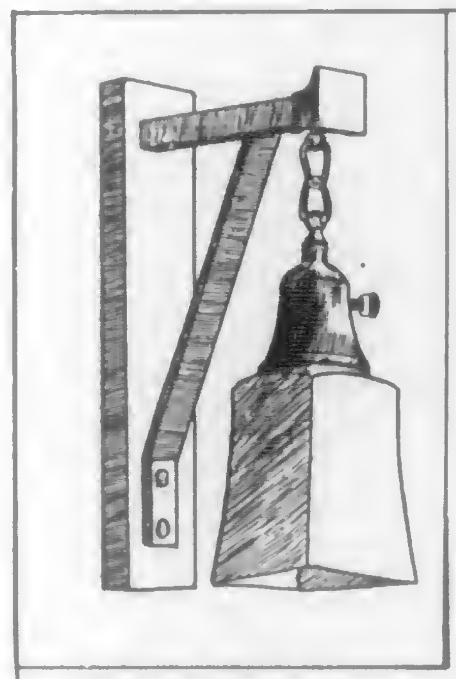
Their machinery is so constructed that it produces the greatest vacuum with the least power, and this means that every particle of not only dust, but heavy dirt, is removed instantly from the surface cleaned to the dust tanks in the basement.

Plants have been installed in the new Post Office, United States Mint, Chronicle building and Hale Bros.' store, and they have contracts to install plants in the Monadnock building, Fairmont Hotel, St. Francis Hotel, Grand Hotel, Stewart Hotel and Palace Hotel, the Grant, Crocker, Shreve, Humboldt Bank, Union Trust, and numerous other office buildings.

The company's works at Sixteenth street and San Bruno avenue are a scene of busy activity, about fifty hands being employed.

Plants have recently been shipped from here to the Philadelphia Mint, Mormon Temple, Salt Lake, Carson, Pirie, Scott & Co., Mandell Bros. and the Fair, Chicago. They are also in daily use in all the principal cities.

This company has just sold a Thirty Sweeper Vacuum Cleaning Plant to Marshall Field & Co., of Chicago.



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We will give preference to the cost-plus-premium basis for contract business, for reasons which we are prepared to show in the interest of economical and good construction and of clean contract business.

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A distinguishing feature of the **Kewanee System** is the **Kewanee Pneumatic Tank.** This is the water storage tank. It is placed in the cellar of the building, or may be buried in the ground. The water is pumped into this tank instead of into an attic, tower or roof tank.

The Humboldt Bank Building occupies a lot on the south side of Market Street about 100 feet east of Fourth Street with a frontage of 50 feet on Market Street and a depth toward Stevenson Street of 170 feet. The main front on Market Street is to be seventeen stories high with one or two stories in the dome in addition. To plan a water system for a building of this kind, required engineering skill and broad practical experience. We offer you both; and we will make no charge for preliminary estimates, prices and plans.

This building, now in course of construction, will be equipped throughout with the **Kewanee System of Water Supply.**

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Write at once for full description and details, and please mention Architect & Engineer of California.

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Hardware for Big Building

All the hardware for the equipment of the new Tribune building in New York City has been furnished by the Russell & Erwin Manufacturing Company, whose main office in New York is at No. 26 West 26th street, and whose Pacific Coast office is in the Monadnock building, San Francisco. The firm has a large factory at New Britain, Conn., where the finest designs in locks, hinges, letter slots and other equipment for an up-to-date office building are made by skilled workmen.

The equipment of hardware used in the Tribune building is of bronze, of designs approved by the architects. The work is of the most substantial character, and suited for such a modern office building as the Tribune building.

The reputation of the Russell & Erwin Manufacturing Company in its line of production is such that it secures contracts for supplying the hardware for many of the leading structures under way in this and other cities. Among the contracts the firm is now filling, besides that for the Tribune building, are those for fitting up with hardware the new Plaza Hotel, at Fifth avenue and 59th street; the new building for the Trust Company of America, in Wall street; the spacious United States Express Company's building, in Church street, overlooking Trinity churchyard; the new Bourne building, and a great number of new office buildings, hotels, and the finest private residences in all parts of the United States.

The fact that the company guarantees all the material used in its hardware to be of the best assures the character of the work, and makes certain increasing satisfaction with it as years go on. The fine character of its work done by the Russell & Erwin Company is shown in the equipment of the Tribune building, to which especial attention has been given, and the results speak for themselves.

A Good Floor Polish

While a hardwood floor is the thing to be desired, it is a thing that requires more attention than it usually receives to bring out its beauties and render its peculiar advantages striking and lasting. For this kind of a floor a polish is indispensable, and Butcher's Boston Polish, manufactured by the Butcher Polish Co., 356 Atlantic avenue, Boston, Mass., meets every requirement. The company makes three lines of goods: Butcher's Boston polish or wax finish, No. 3 reviver and liquid polish. They also manufacture a line of weighted brushes for applying the polish. This polish has

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stood the test of years—the real crucible in which to try things—and is in no sense an experiment. Those wanting perfect floors that can be kept clean with little exertion and prove ornamental as well as useful will do well to investigate this polish. Illustrated booklet upon application.

Praise for Solar Heater

The following letter is self-explanatory: Solar Heater Company, 342 New High Street, Los Angeles, Cal. Dear Sirs: I take great pleasure in saying that after a thorough trial extending over a year and a half, our solar heater continues to give just as much satisfaction as when first installed. I am ready to admit that we were unreasonably prejudiced against the heater, and feel that by refusing to let you install one in my house for so long a time after you first approached me upon the subject, we lost a great deal of comfort and convenience. It looks to me that all your company needs is a little judicious advertising to increase your business beyond your greatest expectations. Of this we are sure, that every person having a heater will in a way become an advertising agent for your company, for so great will be his satisfaction that he cannot help talking about it.

Kindly accept best wishes for your future prosperity, and permit me to remain, Yours very truly, (Signed) J. J. Backus, Sup't of Buildings.

Roberts Bros. Get Contract

The Roberts Bros. Company, with offices in the Central Bank building, Oakland, have been given the contract for erecting the new telephone building for the Pacific States Telephone Company on Forty-fifth street, Oakland. The plans were by C. W. Dickey, architect in the Macdonough building, Oakland. The contract price is $43,459. This is one of several large contracts recently secured by the Roberts Company.

The S. T. Johnson Company

The S. T. Johnson Company, contracting engineers' and manufacturers of air, steam, gas and retort oil burners, has just completed and shipped two fine oil burning plants for the Nevada Railroad Company. Mr. Johnson has also installed oil burners in the Hotel Savoy, Bennett's Restaurant, the California Cafe and a number of other places. The Company manufactures its burners at its plant at 1334 Mission street, San Francisco, which is also the office and sample rooms address. The Johnson systems are coming to be recognized as unexcelled for neatness, durability and economy.

GOOD BRICK FOR GOOD ROADS

SHURE THE STREET IS A BRICK
GALE

Charles H. Frost

IN CONNECTION with the good roads movement now being waged throughout the State of California the Los Angeles Pressed Brick Company is coming into prominence as the manufacturer of a superior paving brick which is said to make a road unexcelled for automobile, carriage and general traffic. Only a few days ago the company received an order for 100,000 paving brick from the Sacramento Electric, Gas and Railroad Company. The same type of brick is being used extensively by the Los Angeles Railway Company and other electric railway corporations which find them superior in many ways to the common paving stone.

Charles H. Frost, the popular president of the Los Angeles Pressed Brick Company, has long been a good roads enthusiast, and because of his prominence in the movement the Los Angeles News recently printed a cartoon of Mr. Frost which is reproduced herewith for the enjoyment of his Architect and Engineer friends. In addition to being president of the Brick Company Mr. Frost is vice-president of the American Olive Company, a member of the Jonathan Club and an Al Malaikah Shriner.

Specifications for Sidewalk Lights

John McGuigan & Co., sidewalk, light and fire-proofing contractors, write, giving a few timely suggestions regarding the specialty of sidewalk lights. They advocate the use of solid cast iron for the construction part of the work and call attention to the fact that many architects now specify only cast iron with 2½ inch round lights: The following specifications are offered.

The sidewalk lights will cover spaces as outlined on plans.

The frames or bottoms to be of cast iron.

Frames to be properly set on the steel beams or arches placed for that purpose by other contractors.

All metal work to be painted on the exposed surfaces with two coats white lead and oil.

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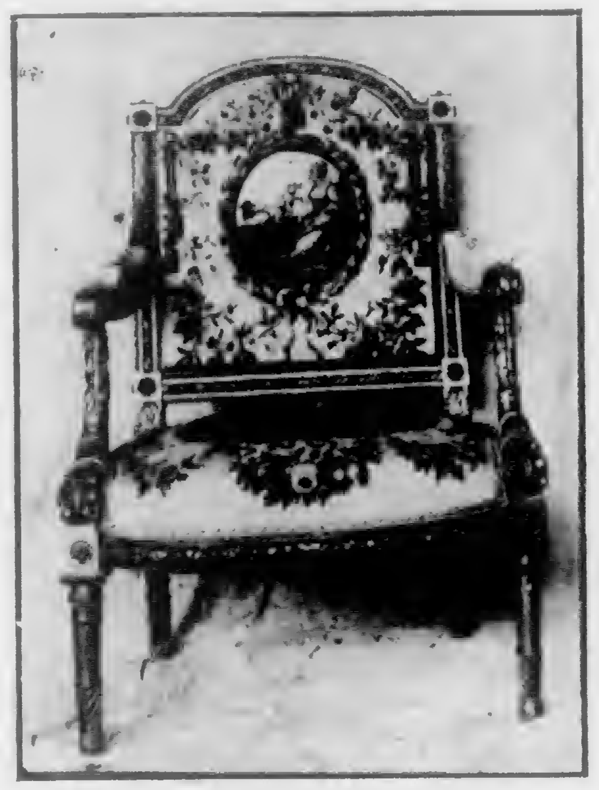

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Lenses to be 2½ inch circular-plain.

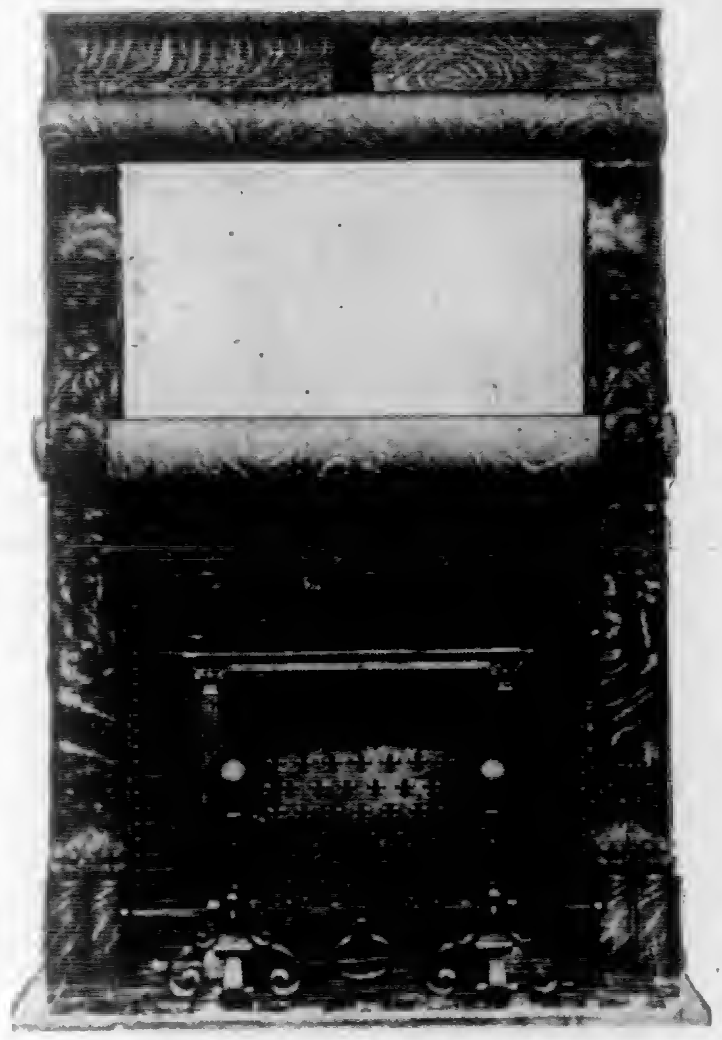
The concrete filling between the lights to be done in the most approved manner with the best materials.

All the work to be pointed up at completion and guaranteed water-tight for one year.

If extra heavy plain lights are required, then insert. Lenses to be 2½ inch circular by 1¼ inch thick.

If part refracting lights are required then insert. Lenses to be 2½ inch circular, one-half plain and one-half pendant, prismatic, refracting, placed so as to obtain the best results.

If all refracting lights are desired then insert. Lenses to be 2½ inch circular, pendant, prismatic, refracting, placed so as to obtain the best results.



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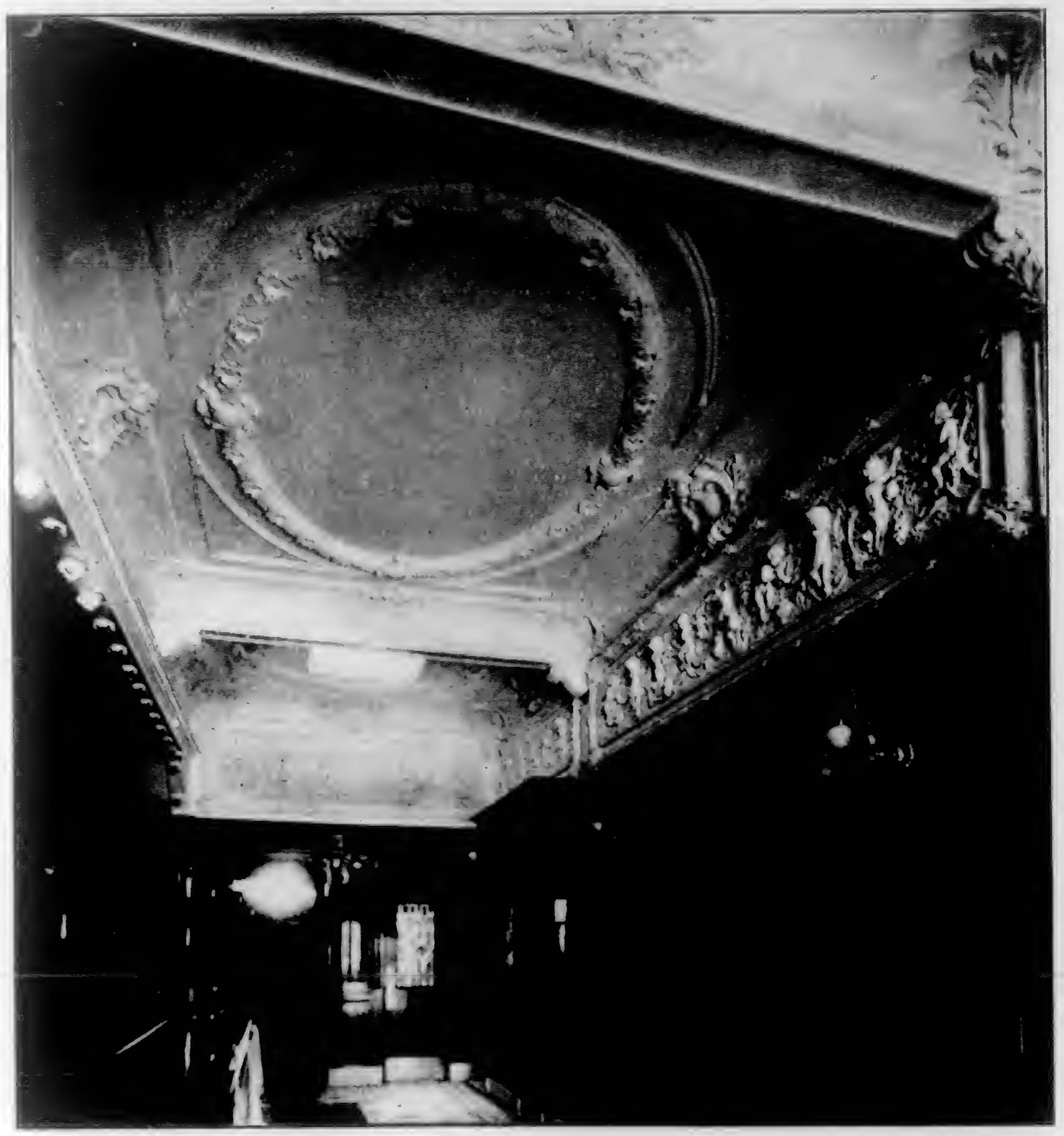

Interior of Ferry Cafe, San Francisco. Ornamental Plastering and Stucco Work by D. Ross Clark

Interlocking Stone Company

The Interlocking Stone Company, office No. 563-9 First street near Clay, Oakland, is making great progress and pushing ahead rapidly. They have just completed their Universal Mixing and Grinding Machine, the principles of which are on entirely different lines from any other concrete mixer on the market, being the only concrete mixing machine that gives a thorough and uniform mix. It can also be used for mixing other ingredients, and for grinding mortar, spices, paint, etc. Mr. Peterson, the manager of the company, is getting the designs ready for a block and pressing machine and when completed will give this company the greatest labor-saving machines for making concrete stone for building purposes to be found in the country.

The company is erecting a large machine shop in the rear of their office, for the purpose of manufacturing all necessary machinery for the production of reinforced interlocking concrete construction. In an interview Mr. Peterson said:

"We challenge all competitors to truthfully contradict the assertion, that we have the best, cheapest and quickest investment proposition owing to the fact that we produce the strongest and most durable stone reinforced and interlocked; also sole owners of the most modern labor-saving machinery for its production.

"If you wish to solve your own financial problem, make an investment in the Interlocking Stone Co., for it will give you the key to the solution of all your difficult financial affairs. Small amount of stock will be offered for sale to the public for a short time only. This will be a quick dividend payer. Come and inspect the greatest labor-saving machinery in the concrete building inndustry."

Hardwood Floors for Fairmont

The Hardwood Interior Company, Percy Meyer and H. S. Meyer, managers, has secured the contract to lay and finish the maple and oak floors for the Fairmont Hotel. About 20,000 square feet including the ball room, dining room, ladies' and gentlemen's retiring room and other rooms, will be required. The contract is one of the largest of the kind let since the fire.

Electroliers are Popular

Oakland is well satisfied with its experiment of lighting the streets with Electroliers, similar to those which have been in use for some time in Los Angeles. Berkeley and San Jose are both planning to follow in the foot steps of their two sister cities. The Oakland lights were installed by H. A. Smith of 651 Mariposa avenue, Oakland. The old arc system of street lighting is now considered antiquated, as the even distribution of Electroliers is considered far more practical; and at the same time more artistic, yet no more expensive. The first lights to be installed were on Washington street and Broadway. It was in the nature of an experiment.

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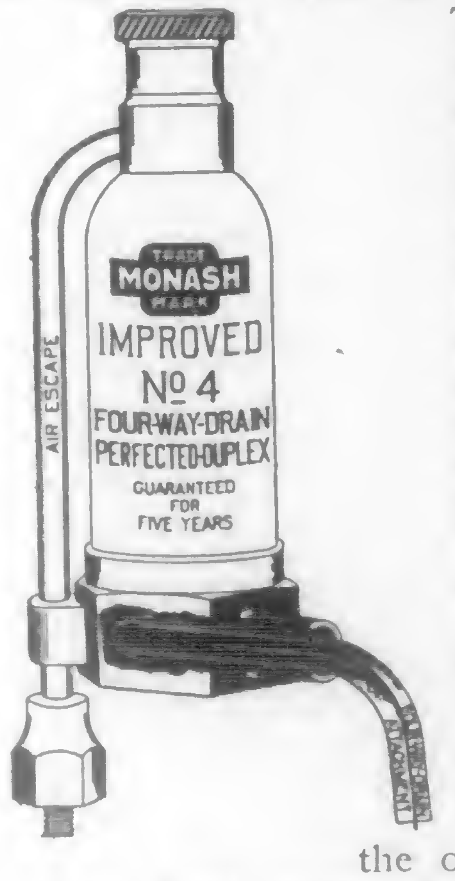

The accompanying illustration shows an air valve with an air escape tube. This valve on the interior is built the same as the Monash Improved No. 6 four-way-drain Perfected Duplex valve, so well known. The improvement on this valve lies in the air escape tube, shown on the exterior of the valve, which is made to conduct the foul air from the radiator into the basement or where otherwise desired, and not allow it to be discharged in the occupied apartment. You have often experienced offensive odor coming from radiators through the valve. This obnoxious odor can be overcome through the use of this valve. For samples and further information we refer our readers to the manufacturers, Monash-Younker Co., Chicago, New York.

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Otis Elevators in the Rosenheim Buildings

Two of the prominent buildings designed by Architect Rosenheim are the Herman W. Hellman building and the new Hamburger store at Broadway, Hill and Eighth street, Los Angeles.

The Otis Elevator Company built and installed the elevator plant in the Herman W. Hellman building, consisting of four double screw or tandem worm type electric passenger elevators equipped with the full flash light signal system and one electric freight elevator. These machines are all located on the roof and so arranged that no valuable space is taken up by the machinery. This is a very busy elevator plant and is a thorough demonstration of the fact that the Otis Electric Elevators are perfectly reliable for the most severe office building service.

The plant that the Otis Elevator Company is now building for the Hamburger store will be one of the most complete equipments on the Pacific Coast. This consists of eight electric passenger elevators with car speed of 200 feet per minute, two electric passenger elevators, car speed 275 feet per minute, two electric freight elevators with car speed of 150 feet per minute and capacity of

ORNAMENTAL
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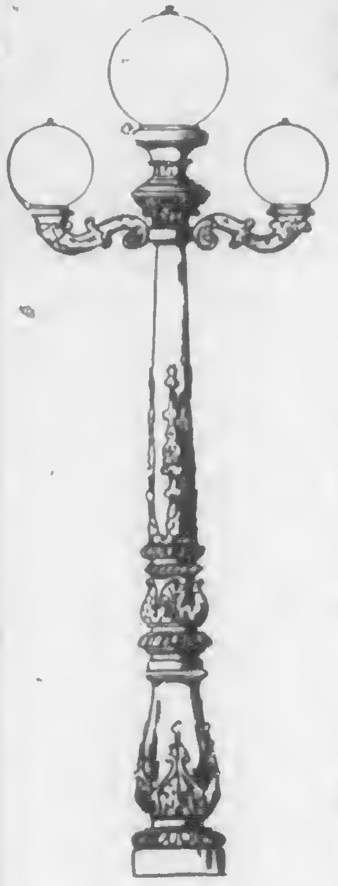

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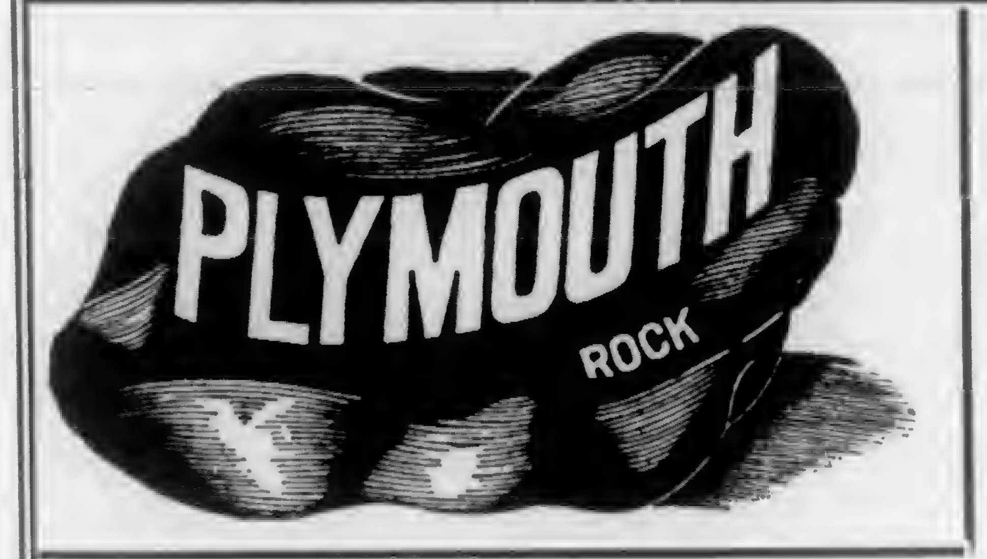

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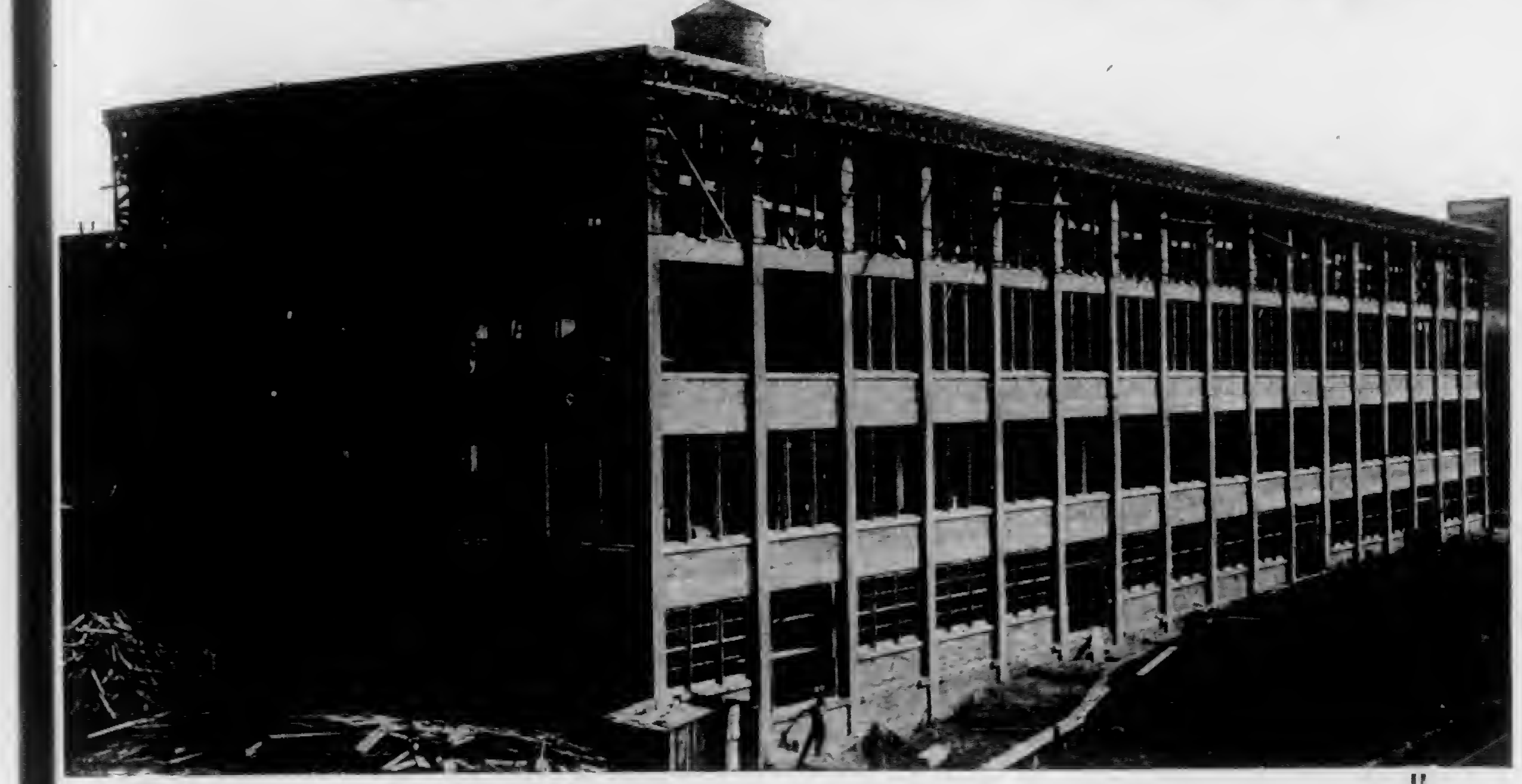
KAHN SYSTEM
of Reinforced Concrete



Showing one corner of the new plant of the E. R. Thomas Automobile Co., Buffalo, during construction
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During the coming year we will continue the publication of the "Trussed Concrete Bulletin," and if you will write your request on your business letter head, we will be pleased to place your name upon our mailing list.

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Second or browning coat—One part Empire hard wall plaster, two parts clean sharp sand floated up even with grounds.

White or putty coat—One part Empire finishing plaster, three parts line putty gaged with hard wall plaster.

Sand finish—One part Empire hard wall plaster, two parts clean sharp sand.

Wood lath, two-coat work—One part Empire hard wall plaster fibred, two parts clean sharp sand (fresh-water sand preferable), mixed thoroughly and applied within two hours after mixing.

White coat and sand finish same as for metal lath.

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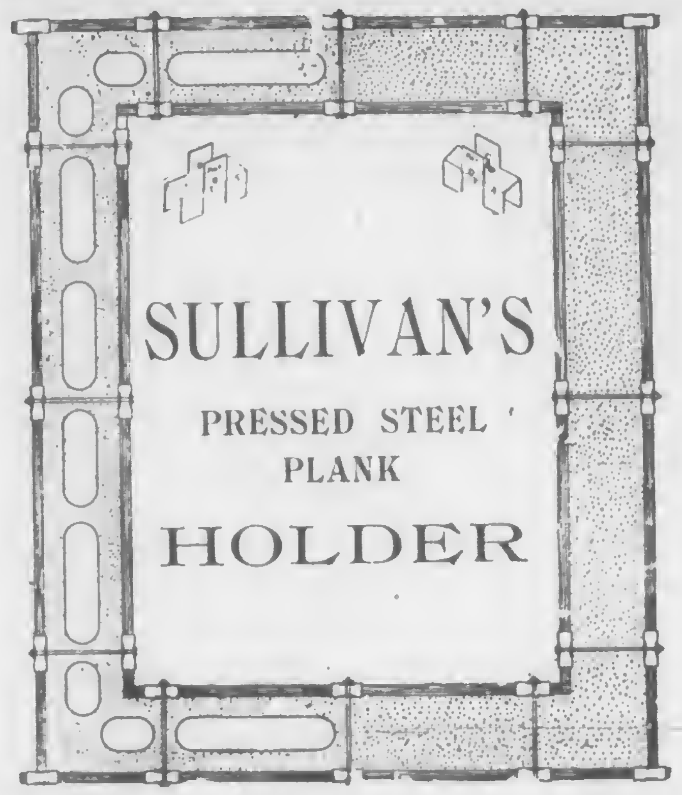

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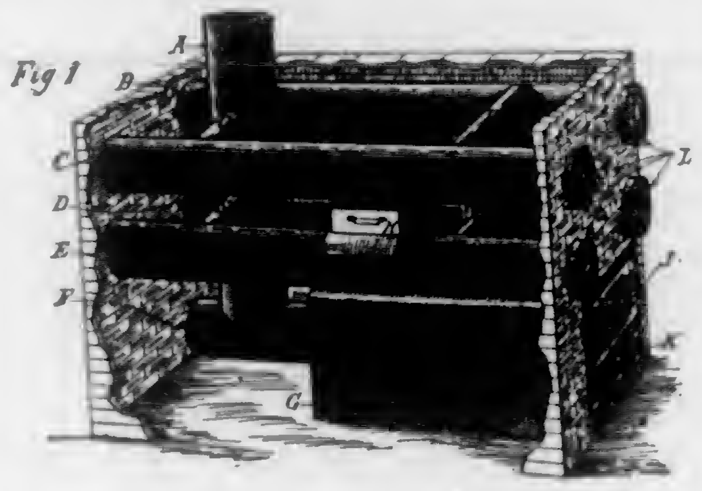

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The blast system put in by the Machinery & Electrical Company, is especially suited for hotels and hospitals. The requirements of the hotel and

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the hospital, while being somewhat similar are still essentially different. In the hotel building heat only is aimed to be supplied with the incidental ventilation that comes from the use of fresh, pure air as a heating medium. That incidental ventilation only is required is due to the fact of the small number of occupants to be found in the ordinary hotel room used for sleeping purposes only; so that the amount of air that is required for heating will furnish extremely good ventilation for the number of persons present to vitiate it. The Machinery & Electrical Company has installed a very good example of this class of apparatus in the Hotel Hayward in Los Angeles. This is an eight story, reinforced concrete building and the heating system is installed in the attic of the building. A very carefully designed system of concrete ducts was provided to reach each room, and through these galvanized iron hot air ducts were installed with suitable registers, so that the galvanized iron ducts supply hot air, and the space between the galvanized ducts and the concrete ducts was available for vent ducts.

In the attic of the building is installed a 120 inch Sturtevant Fan, with the necessary heating coils arranged so that the temperature can be controlled from the engine room. The steam distribution is facilitated by the use of the Paul System of steam distribution. The air supply is taken at the level of the roof and passes through an improved type of Coke Air Washer, so that the air supply is thoroughly washed and purified, and is then heated and delivered to the various rooms. The system of heat regulation is not automatic, but is controlled by hand regulation only.

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General View of Our Plant

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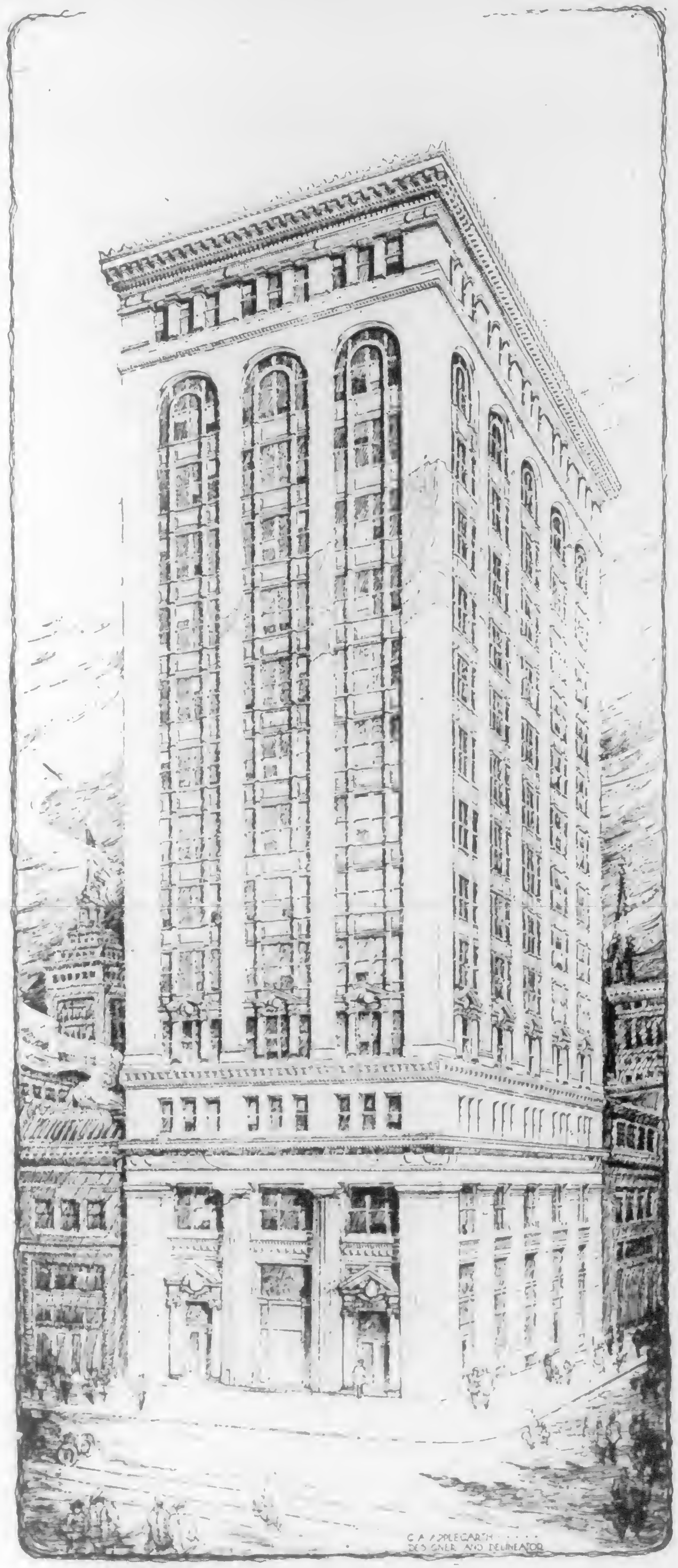

Design for Metropolis Trust and Savings Bank, San Francisco
L. B. Dutton, Architect

Frontispiece, The Architect and Engineer
of California, April, 1907

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THE
Architect and Engineer
Of California

VOL. VIII. APRIL, 1907. No. 3.

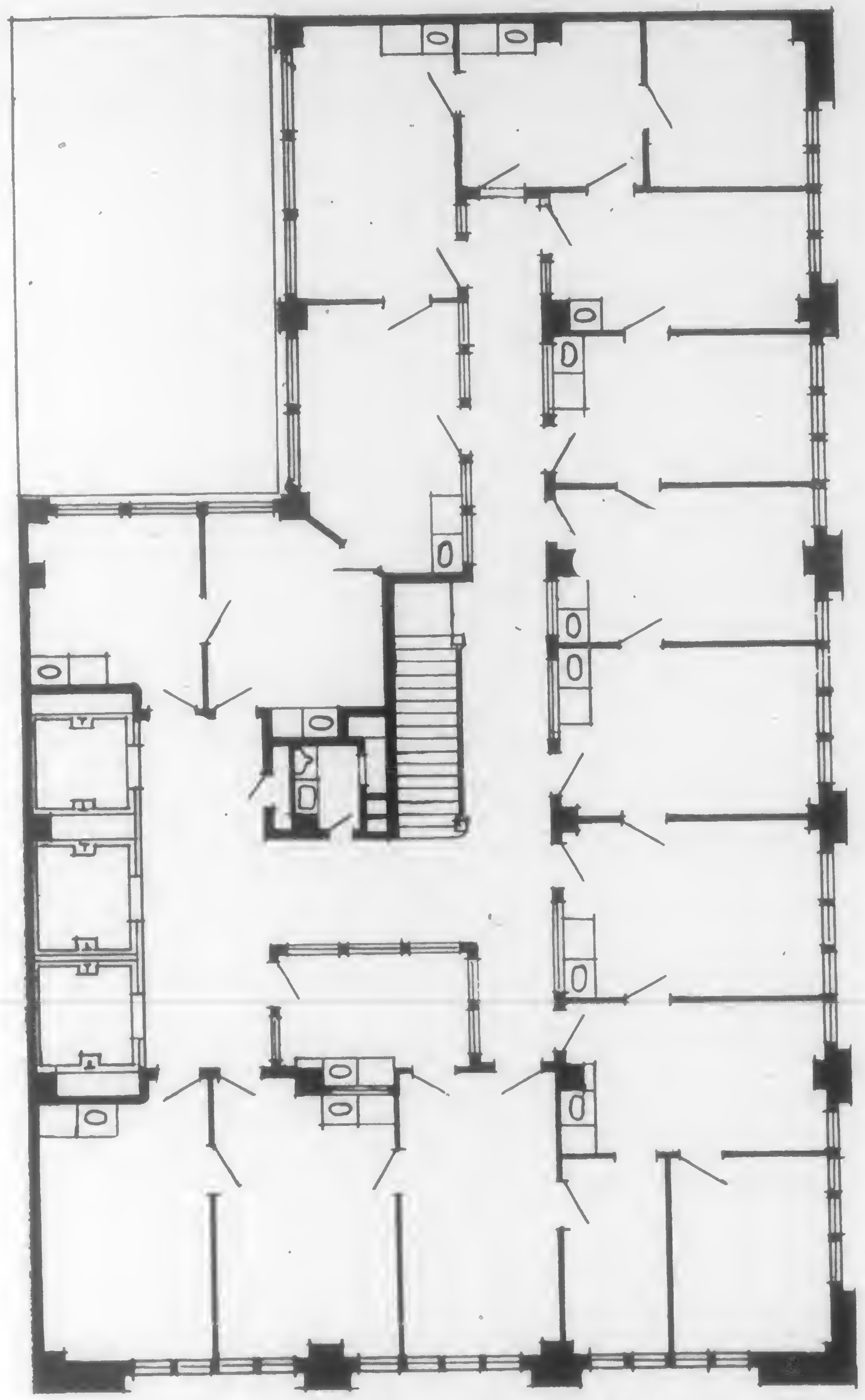
Some Bank and Office Building Designs

AMONG the architects whose work is attracting more than common attention in the rebuilding of San Francisco, is L. B. Dutton, who has designed a half dozen bank and office buildings of recognized merit.

Notable among the list are the Metropolis Trust and Savings Bank, a fourteen story office building to occupy the site of the old Grand Hotel; an eight story office building for the Eyre Investment Company, an eight story building for the Mechanics' Savings Bank and an office building of the same height for the First National Bank of Oakland. A distinctive feature of the Dutton buildings is that they are all designed on simple business lines, yet all present an exceedingly rich appearance, the latter effect being obtained by contrasting the broad, plain surfaces with well placed ornamentation. Glazed terra cotta will be conspicuous in the construction of several of these buildings.

The use of glazed terra cotta for exteriors Mr. Dutton considers the very best possible architectural clothing for steel skeleton frames. It is light; as fire-proof as anything; quickly erected; made complete at a distance from the site and shipped ready to erect; easily and quickly hoisted and handled; more rigidly tied to steel backing than stone or brick work; absolutely impervious to moisture, and therefore impervious to dirt, and easily cleaned of any dust that adheres to the surface, making a finish which can easily be kept in a presentable state at the slight cost of washing it on the exterior once a year. This washing can be done by janitors who clean windows, and involves but a slight expense. This same terra cotta can be had in all colors so that the most beautiful coloring effects may be obtained in a permanent way that leaves no guessing as to the future results, such as the colorings of cement, which is advocated by some.

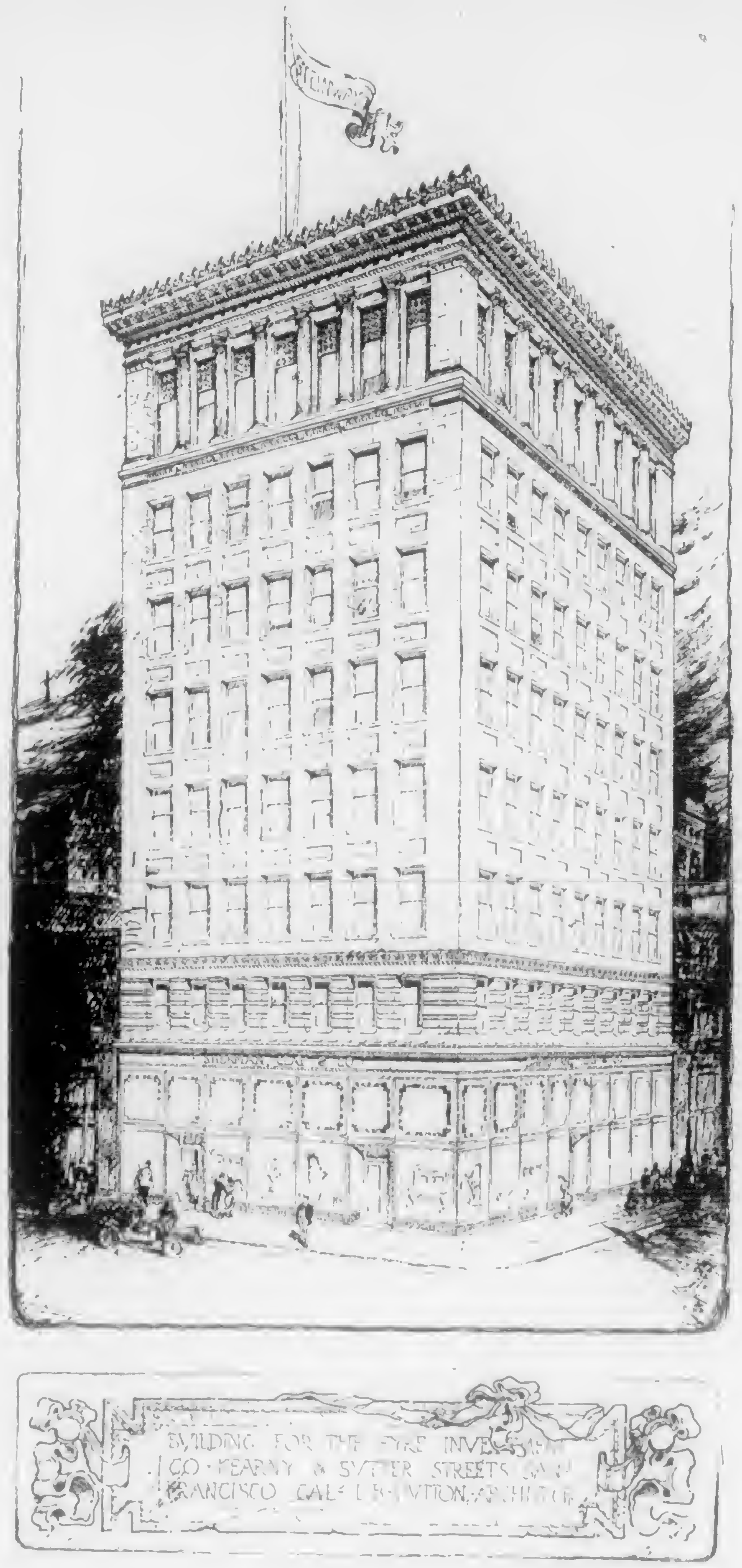
The rapidity with which terra cotta can be installed is one of the greatest recommendations for its increased use. The fact that the very best modelers in the country are employed in executing designs for architectural work increases the pleasure in working this material because after designs and details are carefully made and photographs furnished and models accepted, the architect can rest assured that the results he gets will be what he expected.



Typical Floor Plan, Metropolis Bank, San Francisco
L. B. Dutton, Architect

The Eyre building is located on the southwest corner of Kearny and Sutter streets. It is of mat glazed, cream white terra cotta throughout. The first story is entirely of plate and prism glass without any masonry whatever, the thought being that the super-structure would look more substantial without the usual pipe stem masonry supports installed in front of structural steel columns.

This building is of steel skeleton construction throughout, wind braced by use of double channels placed each side of each column throughout all stories. By this method the unsightly knee braces, which it has been customary to install, are done away with and the strength of this double channel iron construction for wind bracing is ample.


BVILDING FOR THE EYRE INVESTMENT
CO · KEARNY & SVTTER STREETS SAN
FRANCISCO CAL · L · B · DVTTON ARCHITECT

Eight Story Office Building for the Eyre Investment Company, San Francisco
L. B. Dutton, Architect

The floor construction is of reinforced concrete between spans of beams, which are approximately six feet centers.

The concrete for floors and also for the blank walls is made of crushed brick, which forms a most perfect concrete aggregate. The ease with which this aggregate can be shoveled increases the economy resulting from its use, and the results have been so entirely satisfactory, and it is so much more thoroughly fire-proof than stone, that its use will be continued even if the cost of brick aggregate should equal or exceed that of stone.

* * *

Terra cotta would have been used in the Metropolis Bank building, located at the southeast corner of New Montgomery and Market streets, if it had not been the desire to decrease the cost by use of pressed brick.

This building will be constructed of stone for the first three stories, and with pressed brick and terra cotta trimmings for the upper stories.

The effort has been to secure as much light in the offices as possible and the masonry was reduced to the merest skeleton. The increased glass area accomplishes several things: First, it increases the amount of light available for offices; decreases the cost of steel work on account of the additional lightness and decreases the cost of masonry by reducing the quantity, and this in turn decreases the size of the foundations and the amount of excavating for same.

The elevators used in this building will be the Otis Company's Traction Electric. This is the first electric machine manufactured which is capable of running at a high speed, developing between 600 and 700 feet per minute and capable of the same perfect control that is characteristic of the ordinary electric machine. The elevator gates will be double acting and equipped with an automatic device for opening and closing, which is entirely under the will of the operator, and which secures about twenty-five per cent more efficiency for elevator service and at the same time reduces by that amount the time required for trips.

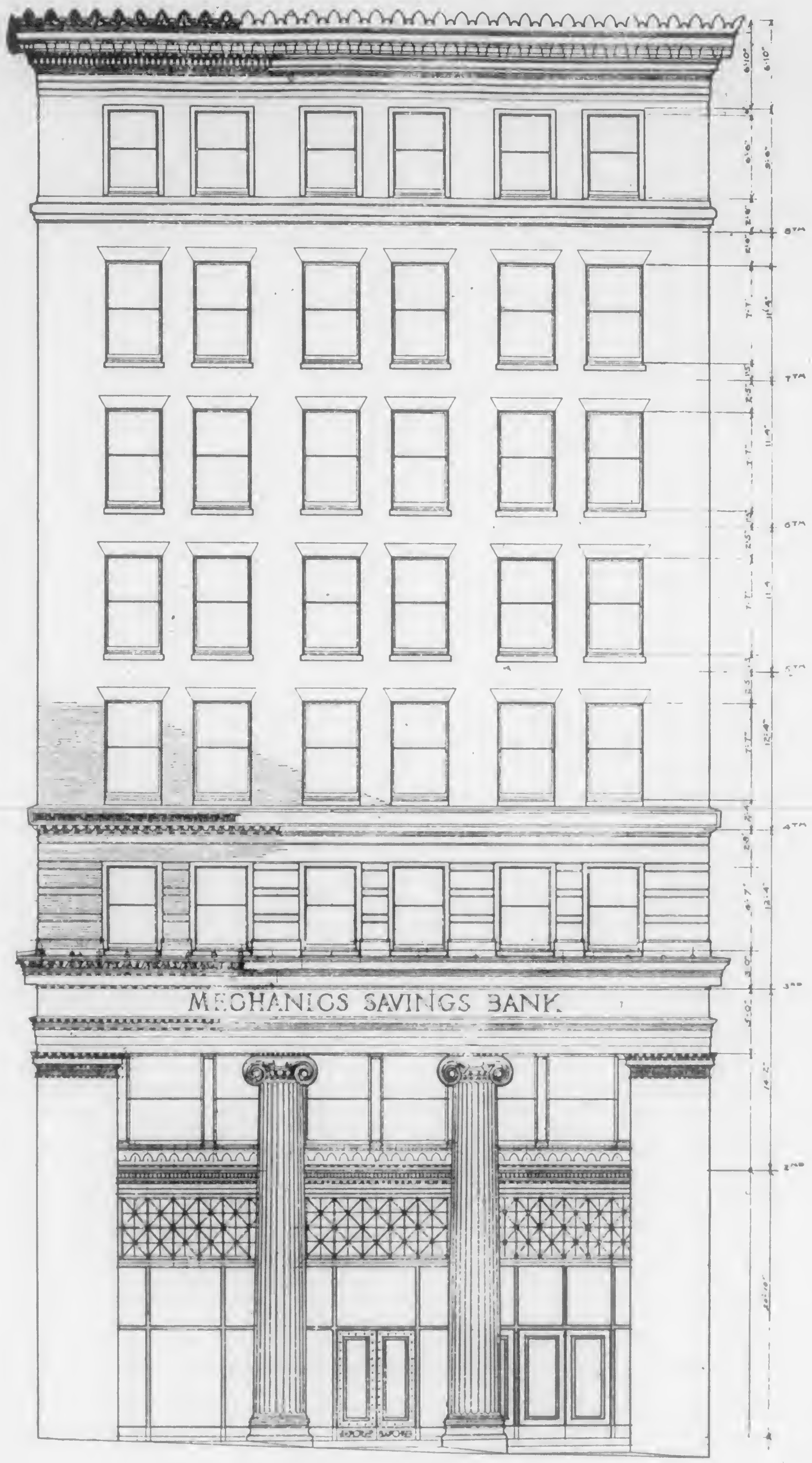
An Ejector System will be used in this building for the purpose of making a deep and attractive basement, which will contain a large safe deposit department. This system works automatically day and night without attention and forms as perfect a means for raising sewerage to a higher level as any known. It is operated entirely by compressed air.

* * *

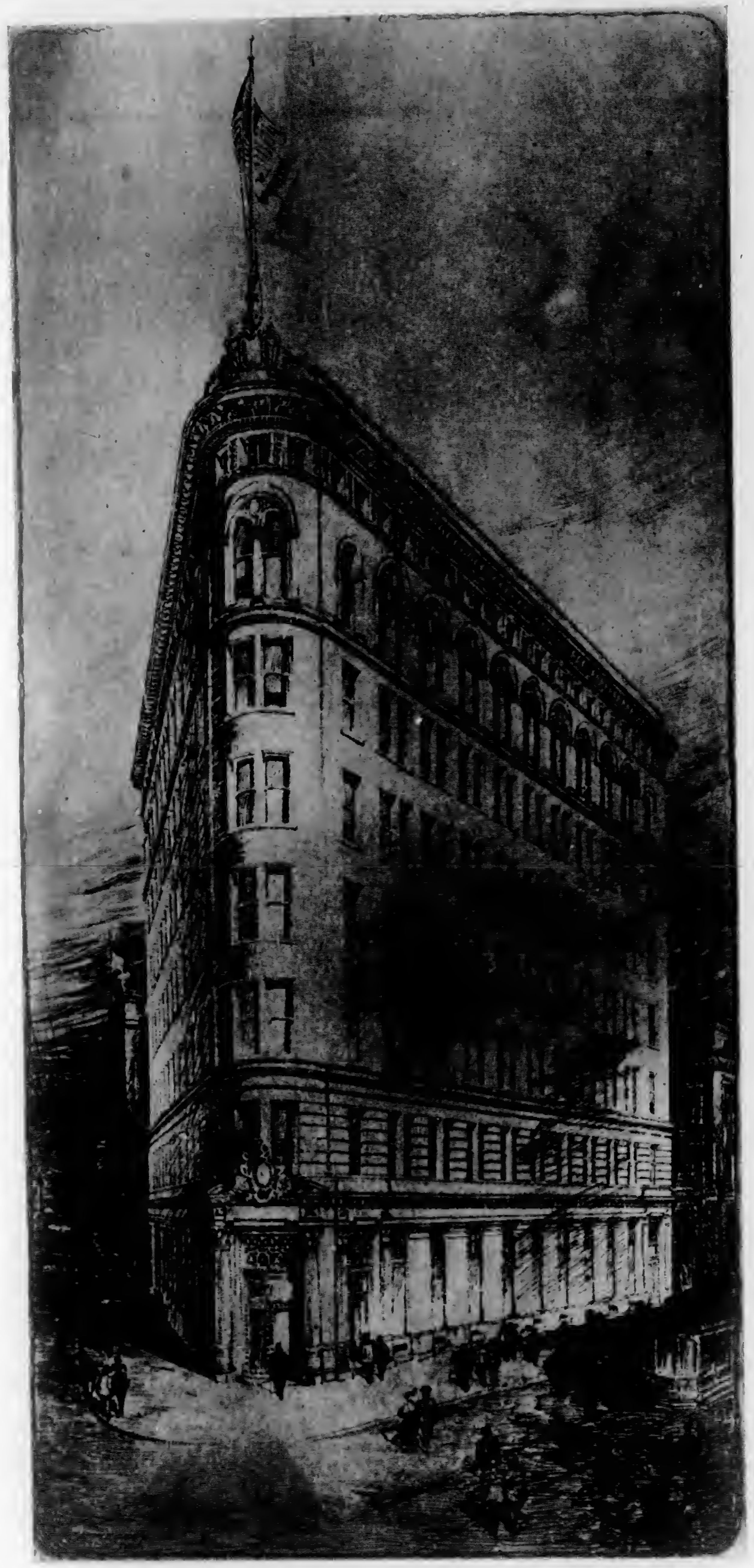
The First National Bank building of Oakland is located at the intersection of San Pablo, Broadway and Fourteenth streets. The first story is of white granite; the upper stories of mat glazed terra cotta. The construction throughout is of reinforced concrete. The first floor will be used exclusively for banking quarters for the First National Bank and for the operation of a safe Deposit Department. The remainder of the building will be for high class tenants. The glazed terra cotta is supported from concrete forms by means of three by four inch shelf angles projecting into it and will be further secured by means of anchors built into the concrete work.

It is the intention to fit up the first story of this building throughout in Mexican onyx selected for uniform tints.

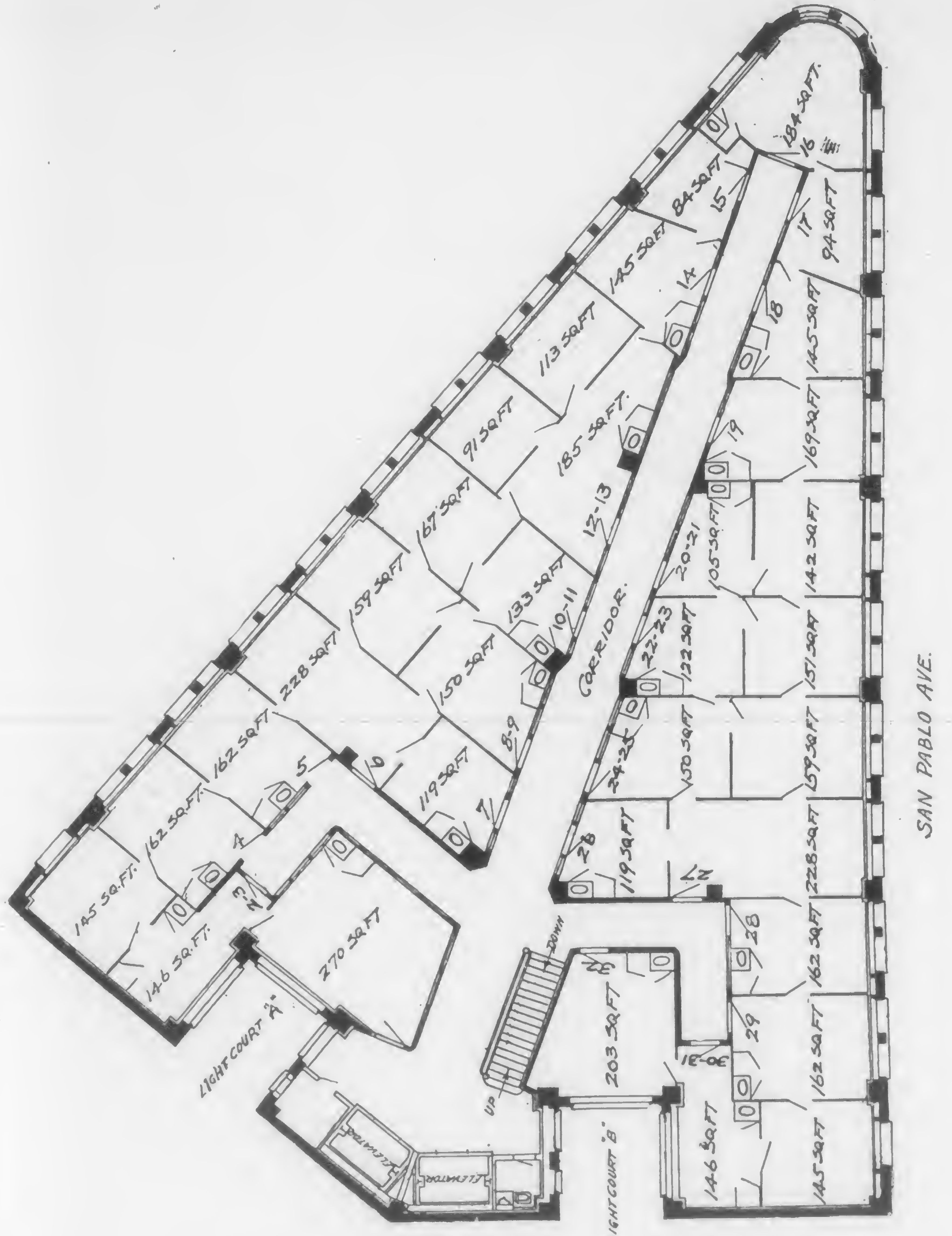
The entrance corridors to this building will be fitted up in the most beautiful marbles inlaid with glass mosaic. In this entranceway will be located a main stairway leading to the upper stories, and a stately double marble stairway leading to the basement of the building. Owing to the location of this building on a gore lot there is an enormous area of sidewalk lights avail-



Front Elevation, Mechanics' Savings Bank, San Francisco
L. B. Dutton, Architect



First National Bank Building, Oakland
L. B. Dutton, Architect



Typical Floor Plan, First National Bank Building, Oakland
L. B. Dutton, Architect

able. This has been taken advantage of in order to beautifully light a very extensive cafe which will occupy the entire basement except the portion reserved for mechanical operations. This cafe will be fitted up in the most modern style, the idea being to surpass any of the latest successful efforts in Eastern cities. The abundant day-light secured in this cafe will make it a very attractive place and dispel any idea of its being located below the ground level. The offices in the upper stories will have most perfect elevator service, equipped with automatic gates operated by compressed air. These elevators will be capable of attaining a high speed and give most efficient service. The corridors will be finished in white marble, and the floors in marble mosaic.

The location of this building on a gore lot gave an opportunity to secure an abundance of light to every office. Metal sash glazed with plate wire glass will be used for all exposed portions of this building. With the idea of securing physicians and dentists as much as possible for the tenancy of this building the offices have all been fitted up with special drains for the use of doctors and dentists with compressed air outlets for all offices; with fuel gas outlets, and with electric power connections making it possible to obtain both 110 and 220 volts; higher voltage up to 500 can be secured by simply making further connections to the high voltage current wires.

The attic of this building was designed to contain steam and water pipes and the storage of valuables. The increased demand for offices in this unusually attractive location lead to the raising of this story sufficient to allow for fitting up of offices throughout the eighth story, which in addition to the outside windows have large skylights giving a vertical light so much desired by many tenants.

The building will be equipped throughout with the most approved air cleaning device, which insures that carpets and rugs will be free from dust, and the building much more sanitary than can be secured by any other means. All the above conveniences for tenants will be furnished free of charge and insure great popularity for this building, so the owners will be able to make a careful choice of desirable and permanent tenants.

The Thompson-Starrett Company is executing the work for this building; also, that for the Eyre building and the First National Bank building of Oakland.

* * *

In the Mechanics' Savings Bank building, located at the northeast corner of Market, Turk and Mason streets, the exterior will be of stone or light glazed brick for first two stories with buff pressed brick and terra cotta above. The glass front in the first story of this building is set back behind the two central columns forming the first story loggia, the idea being to get as large a glass surface as possible exposed to Market street. This building is located on one of the numerous diagonal corners which are so common on Market street. It was thought by eliminating the corner and curving the front that the effect would be similar to a continuous front and much more pleasing to the sight than one with the usual sharp angles. The large columns marking the entrance to the bank will be of cream white marble, slightly marked with darker veinings.

This building will contain an extensive Safe Deposit Department in the basement. The first floor will be used for the bank and two stores, the remainder of the building will be used for office purposes.

The Lindgren-Hicks Company are executing the work.

California Architects and Engineers Inspect Government Works

By OCTAVIUS MORGAN, Architect.

THE Engineers and Architects' Association of Southern California had their annual outing on Saturday, March 9, this time visiting the breakwater and harbor of San Pedro, Wilmington, and Long Beach, they having been invited by Captain Fries, the U. S. Engineer in charge of the work there, to inspect the breakwater and harbor improvements. A party of ninety odd members of the Association, and the members of the Board of Public Works of Los Angeles, boarded an electric car at the Pacific Electric Depot at 1:00 P. M. for the trip to San Pedro.

One of the most notable features of the trip to the ocean was the vast improvement that had been made since our previous trip. At that time from the city to the ocean was a grass covered plain, a simple cattle ranch—five short years ago. Today we speed along on the most complete electric railway in the United States at a speed of forty and fifty miles an hour, through what might be termed a continuous suburb of Los Angeles reaching to Wilmington, some eighteen miles.

In crossing the pile trestles of the bay from Wilmington to San Pedro one could but note the great area of water and mud flats that could be readily made into docks and waterways; hundreds of acres,—yes, thousands. Through San Pedro we went by the side of the wharves and numerous shippings unloading their cargoes, and on through the town into the high ground above the outer harbor site, and on to Point Firmin and its lighthouse, where we stopped for a little while to take in the scene. Fortunately it was an exceedingly bright day, the storm and rain of a few days since having thoroughly cleared the atmosphere. The Island of Catalina, our major breakwater, seemed but a few miles away, stretching its long backbone across the horizon to break the storm and waves that had crossed the mighty Pacific. Looking to the east we had before us a full view of the Sierra Madre Range extending above the clouds, showing the snow-clad peaks of Mt. Lowe, Old Baldy, San Antonio, and the San Bernardino, San Jacinto, and San Diego peaks, the whole sweep of mountains covering a hundred miles in length. Never had there been a grander view of this mountain chain, and between us and the mountains were the green plains and rolling hills, and while these mountains ranged from thirty to seventy-five miles away, yet, as before said, the clearness of the atmosphere made them appear as if a short walk would reach them.

Returning from Point Firmin in our electric car along the bluff to the point from whence our breakwater extended south into the ocean, we made another short stay, taking in a bird's eye view of the breakwater and the new outer harbor site, the piling defining the outlines of the Miner, Huntington, and other dock sites, waterways, and fills for warehouse sites. From here the breakwater takes definite form, the gigantic proportions of the granite walling of the superstructure now being finished about two-thirds, its perfect condition showing its stability and good workmanship after the severe storms of last week, one of the most severe for years. From this point of the bluff note the pile trestles railway track that has been used in the transit of rock from the mainland for the construction of the breakwater, one section of piling had been lifted bodily out of and over the breakwater by the storm, the piling looking like huge jagged teeth just yanked from their seat.

From here we went back to the wharf, taking the steamship Warrior, going out to and girting the outer harbor, and along the line of the breakwater for a closer inspection of its Cyclopean proportions to the end of the breakwater and around onto the sea face, noting carefully its good shape after its late baptism of storm, thence back to the inner harbor by Dead Man's and Rattlesnake Island to the United States suction dredge, noting the workings of its powerful pumps forcing one cubic yard of material from the bottom every second, and forcing it through about fourteen hundred feet of pipe onto the ocean side of Rattlesnake Island, making land for the site of warehouses and other commercial uses. This spit that was a few yards wide now being broadened to hundreds of yards in width.

From here on we went to the ferry landing and took launches for the inspection of the inner harbor, and up to Wilmington, thence up the so-called Cerritos Slough to Long Beach. We were here joined by a delegation from Long Beach with a double-deck launch and two large launches, taking the whole party of one hundred and twenty. In steaming up the channel toward Wilmington old memories of thirty years ago would come back; thirty years ago in going up this channel on a lighter upon which we landed from the steamboat some two miles at sea and outside the bar, then but two feet deep at low water, now twenty-four feet deep at low water, and looking on either side and seeing the vessels draw from twenty to twenty-four feet of water tied up to the wharves, and thinking that but three days since the old Atlantic Line Steamship "Ohio" had laid beside the wharf and pulled out with a good crowd of excursionists to Honolulu, and, looking at the area of mud flats and water around us, and remembering the good work being done by the suction dredge we had just left, and knowing the favorable bottom for the use of the suction dredge, and the good use that would be made by the materials taken up by it, the possibilities of the future of this harbor were almost beyond conception; Glasgow, Liverpool, Antwerp, all appeared before us, and when we think of the great population that shortly must fill this glorious Southern California, and the knowledge of the low passes through our mountains, through which must come the many overland railways, a mighty commercial mart must surely be the future of this place.

Leaving Wilmington we go up the Cerritos Slough, which is really the joint San Gabriel and Los Angeles River outlet to the ocean, surprise after surprise met us all as we go steaming up to Long Beach, knowing the ease with which the suction dredge can widen this channel. About two miles up we come to the charred remains of the suction dredge of the Long Beach Harbor Company, which was destroyed by fire some thirty days since. We note the large area excavated by them and the great fill that has been made on the mud flat around, bring acres and acres of the mud flats six feet above the highest tide level, giving basins and waterways for the shipping, and sites for warehouses and industrial plants. We now come to a large clam-shell dredger in full operation that has taken the place of the suction dredger until such time as the new one can be placed in operation. The feasibility and practicability of this industrial harbor enterprise at Long Beach is fully shown, and when the co-operation of the Salt Lake Railway enables them to straighten and deepen their channel to the Wilmington outlet, its success as a commercial industrial harbor is assured, the material dredged from the harbor and channel enabling the raising of all the mud flats to fit them for warehouse and factory sites of all sorts. There will be some three hundred acres for sites for warehouses and industrial plants, and, should serious objections develop in the straightening of the harbor to Wilmington, then the direct outlet to the ocean can be used as a short cut, the War Department having ordered the Salt Lake Railroad to put in proper drawbridges, that navigation shall not be obstructed.

We now come to the end of navigation at the foot of Third street, where we find many automobiles sent out by the Long Beach people, ready to take us to the center of the town, the street railway, however, going right to this point, but the Long Beach people, always doing the right thing, had provided the more speedy automobiles. When we arrived at the center of the town we found a committee to meet us, going to the large hall where, previous to being called to dinner, Captain Fries outlined the proposed scheme submitted to the War Department for the further improvement of the inner harbor of Wilmington and Long Beach, and its connection with Long Beach, illustrating the scheme with large maps, and giving a synopsis of the work done and proposed to be done, which is given in detail hereafter.

When Captain Fries was through with his talk, we were taken by a Committee of the Long Beach Chamber of Commerce to the dining hall, where the most generous spread awaited us, and, while Long Beach has always had the reputation of being a good "glad-hander", yet, we hardly expected such a hearty welcome as this. It was a dinner, and we had the proper sauce to give us an appetite for it. Our trip around the breakwater and harbor had prepared us to do justice to the good things before us.

After many pleasant speeches of welcome from the Long Beach Chamber of Commerce, the Mayor, and other leading citizens, the President of the Association, Mr. Lippencott, heartily responded, and Mr. Eisen congratulated Long Beach on the possibilities of the future of their city and their harbor, their great enterprise and courage, and that with the examples of Antwerp, Bremen, and the great docks at the mouth of the Thames, as a promise of what the future might have in store for them, that they were justified in all that they had undertaken and might promise.

It was unanimously conceded that this had been the most successful excursion made by the Association, and that the Long Beach Chamber of Commerce and representative citizens had made the day enjoyable by their generous and bountiful feast.

Captain Fries addressed the Association and gave the following information as to the improvements and proposed improvements of the San Pedro and Wilmington harbor:

HARBOR NOTES

Breakwater:

Cost, $2,900,000.

Proposed length, 9000 feet.

Westerly arm, 3000 feet long.

Easterly arm, 4200 feet long.

Curve connecting arms, 1800 feet long.

Radius of curve, 1900 feet = 3° curve.

Gap, breakwater to shore, 1800 feet.

Trestle built and owned by contractor.

The breakwater is built in water from 24 to 52 feet deep, over 7000 feet of it being in depth of 40 feet or more. The 30-foot contour is about 3000 feet inside and nearly parallel with the breakwater. Area having more than 30 feet at low tide protected by breakwater from southeast or more westerly storms, 360 acres.

It is estimated that it will take 130,000 tons of random rubble stone to connect the breakwater with shore. It is not thought necessary to extend the course walls shoreward from end of breakwater proper.

Substructure:—(Portion below mean lower low water.)

Top width, 38 feet. A berme 4 feet wide has been added on the harbor side.

Ocean slope—from M. L. L. W. to depth of 12 feet, one vertical to 3 horizontal—below 12-foot depth natural slope (about one vertical to 1.3 horizontal).

Harbor slope—natural slope (1 on 1.3).

Width at depth of 50 feet, 195 feet.

Stone deposited to March 1st, 2,052,156 tons (2240 lbs.).

Total (estimated) when completed, 225,000 tons.

Practically completed, 8452 feet (78% completed).

Price per ton, $0.844.

Chatsworth Park sandstone allowed in core; covered by granite from Declez of Casa Blanca (near Riverside).

Stone from 100 lbs. to 15 tons in size.

Superstructure:—(Portion above M. L. L. W.)

Top width, 20 feet.

Bottom width, 38 feet. Height, 14 feet above M. L. L. W.

Ocean wall in 4 courses—no stone less than 16,000 lbs.

Harbor wall in 7 courses—no stone less than 8000 lbs.

Stone deposited to March 1st, 148,592 tons (2240 lbs.).

Total (estimated) when completed, 248,180 tons.

Superstructure partially built between points 628 feet and 7245 feet from westerly end, equivalent to 5984 feet of completed wall (66% completed).

Price per ton, $3.10.

Concrete:

Monolithic blocks 40 feet square and 20 feet high are to be built at each end.

Price, $6 per cubic yard.

Inner Harbor:

The jetties forming the entrance to the inner harbor, were built between 1871 and 1893. The original depth of water at entrance was about 2 feet at M. L. L. W. This was increased by scour and dredging to 15.5 feet. Cost of jetties and dredging, $954,497.

The entrance channel is now dredged to depth of 21 feet, and is 400 feet wide. Beginning at a point 4000 feet from the center of Deadman's Island, the harbor is dredged between wharves to a depth of 25 feet at low tide. This portion of the inner harbor is 4500 feet long, and varies in width from 500 feet at lower end to 750 feet at upper end. There is now available 9000 feet of wharves with 25 feet depth at low water and this will be increased to about 11,500 feet by July 1st.

Sufficient money has been appropriated to complete dredging the inner harbor to 25 feet, from a point about 4000 feet above the center of Deadman's Island up to and including the turning basin.

Dredge "San Pedro":

The U. S. dredge "San Pedro" has 20-inch suction and discharge pipes, with 8-inch hydraulic pump direct connected to 600-H. P. triple expansion marine engine. When discharging through 1800 feet of pipe with engines developing about 500-H. P., a mean velocity of 12.6 feet is maintained at the discharge. The discharge is about 28 cubic feet per second.

The dredge cost $98,000. Built by the Ellicott Machine Co. The remainder of the plant, consisting of pontoons, pipes, launch, etc., cost about $20,000 more.

The dredge up to March 1, 1907, had removed 1,438,024 cubic yards. The amount still to be removed, nearly all of which is in the turning basin, is approximately 2,304,500 yards.

The actual cost of dredging to date, exclusive of the first cost of dredge, has been about 8½ cents per yard. It is estimated that the complete dredging (3,754,500 cubic yards) will cost about 11½ cents per yard, including original cost of dredge, maintenance and repairs.

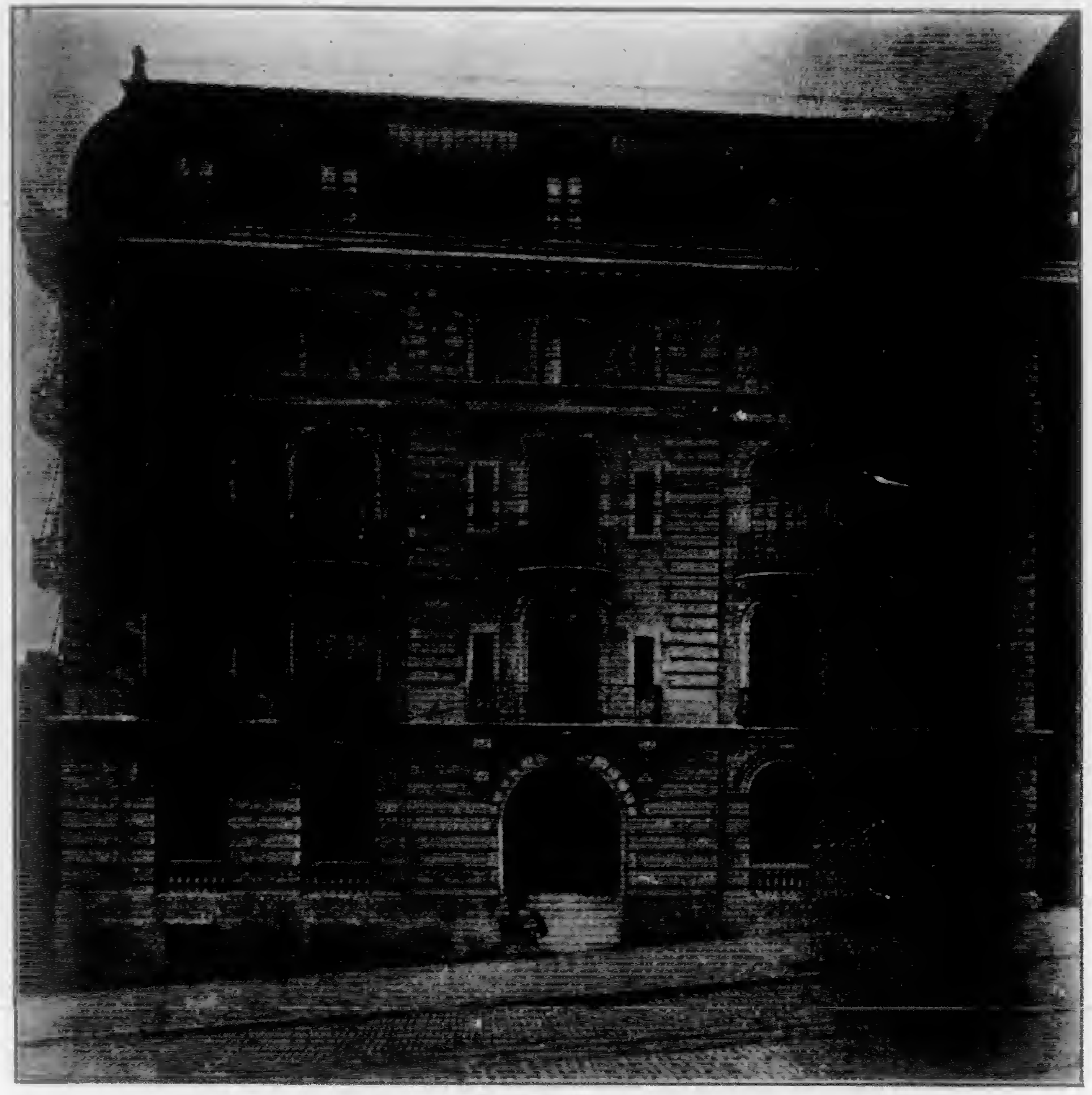
To deepen the inner harbor, including turning basin and entrance channel 400 feet wide, to 30 feet at low tide through its entire length it is estimated will cost not to exceed $570,000. The amount of material to be removed is 3,000,000 cubic yards, of which only a little more than one-half is in that portion of the harbor being dredged to 25 feet. This estimated cost includes the construction of another dredge similar to the one now in use.

To dredge the inner harbor above the turning basin and east of the Southern Pacific Railroad tracks (known as the East Basin) to a depth of 25 feet below M. L. L. W., in accordance with plan now proposed by this office, will require the removal of about 14,450,000 yards of material.

To dredge the West Basin, or that portion west of the railroad tracks, exclusive of slips, to a depth of 25 feet below M. L. L. W. will require the dredging of about 8,350,000 yards.

The water frontage in the East Basin, excluding slips and entrances thereto, is 30,800 feet, and in the West Basin, 19,200 feet. Additional frontage afforded by proposed slips: East Basin, 37,800 feet; West Basin, 42,000 feet. Water area, exclusive of slips: East Basin, 332 acres; West Basin, 206 acres.

Distance from the entrance to inner harbor near Deadman's Island to upper end of turning basin, 11,400 feet, or approximately 2 1-6 miles; from upper end of turning basin to southeasterly corner of East Basin, 8400 feet, or approximately 1 2-3 miles; from the southeasterly corner of the East Basin to Long Beach harbor, on a direct line, about 7000 feet, or nearly 2 1-3 miles; making distance from entrance to inner harbor at San Pedro to Long Beach harbor about 5 1-6 miles.



Apartment Hotel, Pine Street, San Francisco
Sutton & Weeks, Architects

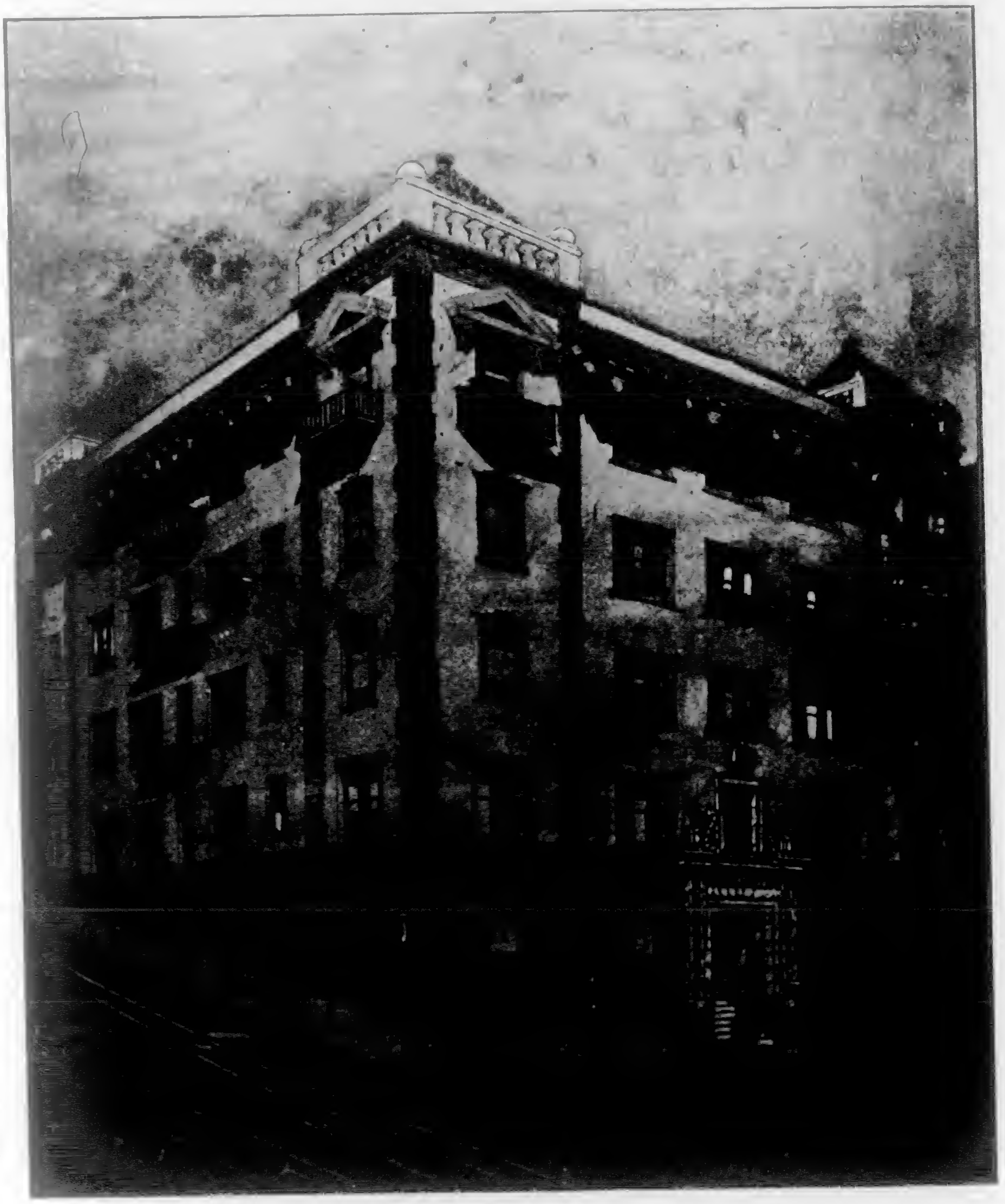
The Apartment House of San Francisco Renaissance

By CHARLES PETER WEEKS, Architect

LONG ago the apartment house came to be an established form of life, following hotel life, as a compromise between it and home life, and combining advantages of both—advantages of economy on the one hand and privacy on the other.

The apartment house had reached a very high development in San Francisco before the fire; had reached such numbers that it had come to be a doubtful good investment.

They occupied, scattered here and there, that entire district as far west of Stockton street as Van Ness avenue, and north of Market to Nob Hill. Today this same district is being rebuilt in the same manner, but in addition, many of the down town residences are being replaced by apartment houses. In fact the future indications are that all of the down town hillside district will be covered with apartment houses, and the



Hotel for Mr. H. H. Larsen. Bush and Powell Streets. San Francisco
Sutton & Weeks. Architects

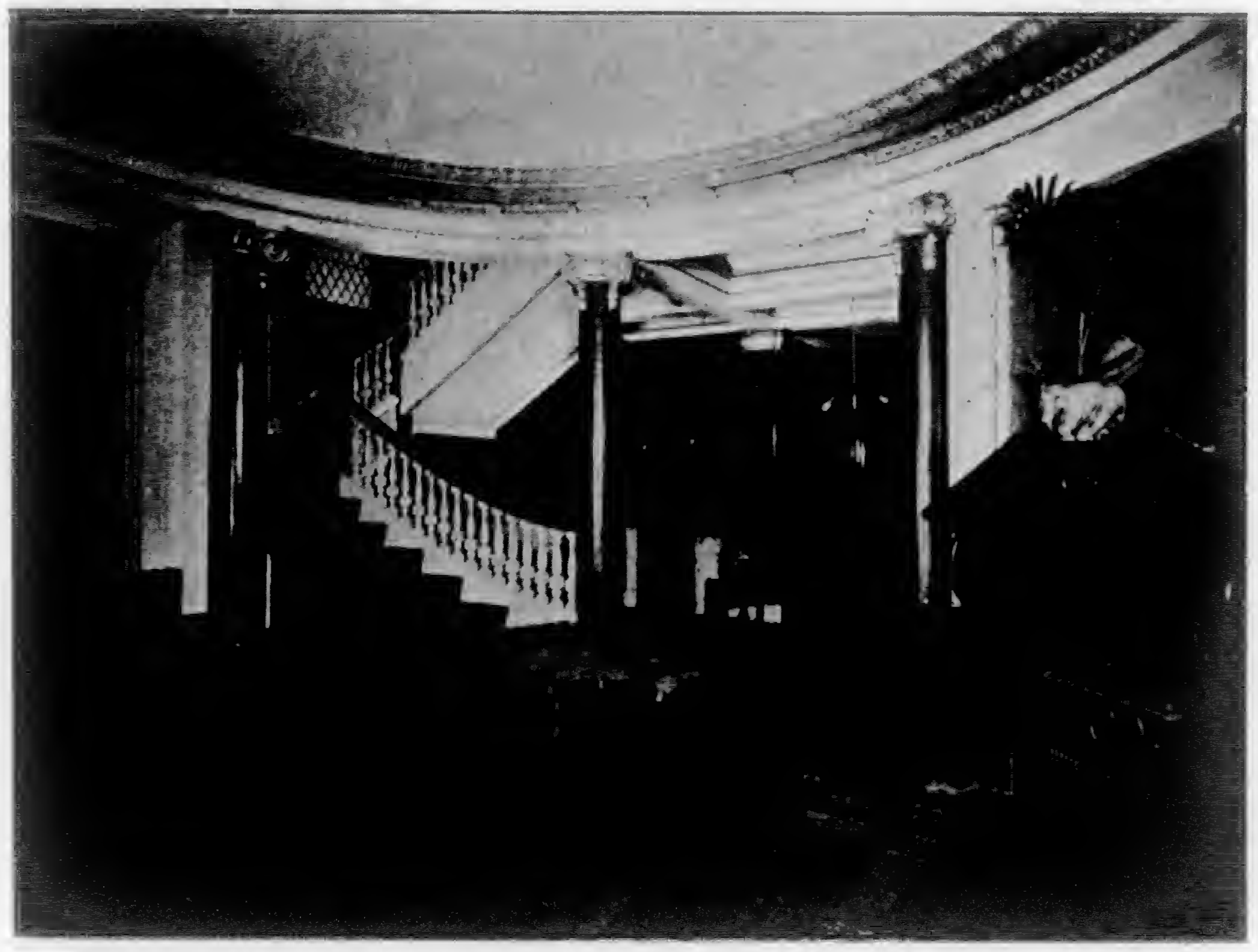
more level parts outside of the strictly business district, with lodging houses and rooming hotels.

West of Van Ness avenue flats will continue to replace residences as they did before the fire, slowly driving them into more remote locations, as early elemental civilization has always been driven out by more economical and complex social arrangements.

Even "the man who can afford" is beginning to limit his "home" to the country, and when in town takes an apartment or goes to a hotel.

The modern apartment consists of three or four rooms, economy again being the motive. There is the living room and the dining-room combined, a kitchen, a bedroom and bath, or two bedrooms; although the latest develop-

Entrance Hall. Apartment Hotel
Sutton & Weeks. Architects



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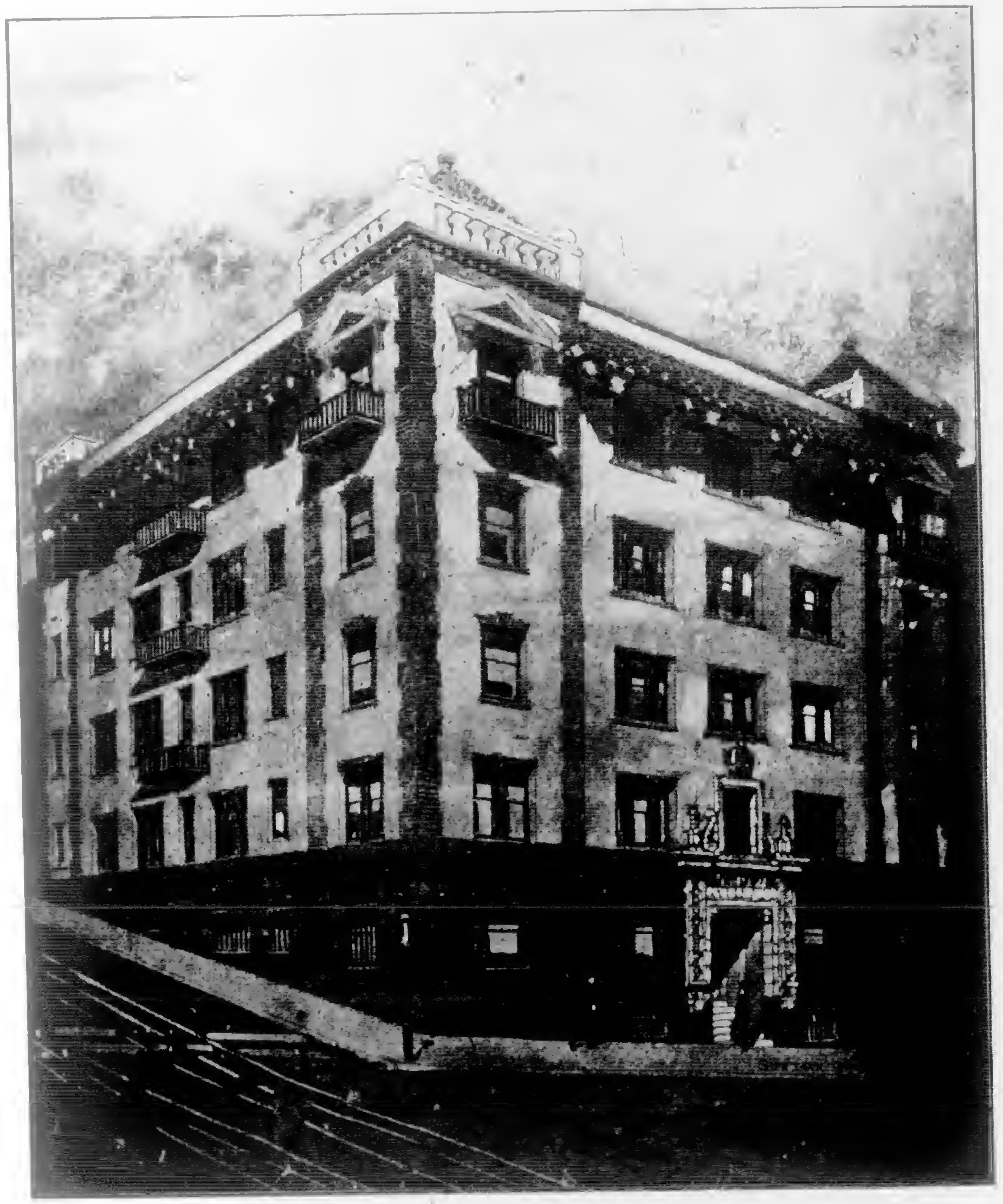

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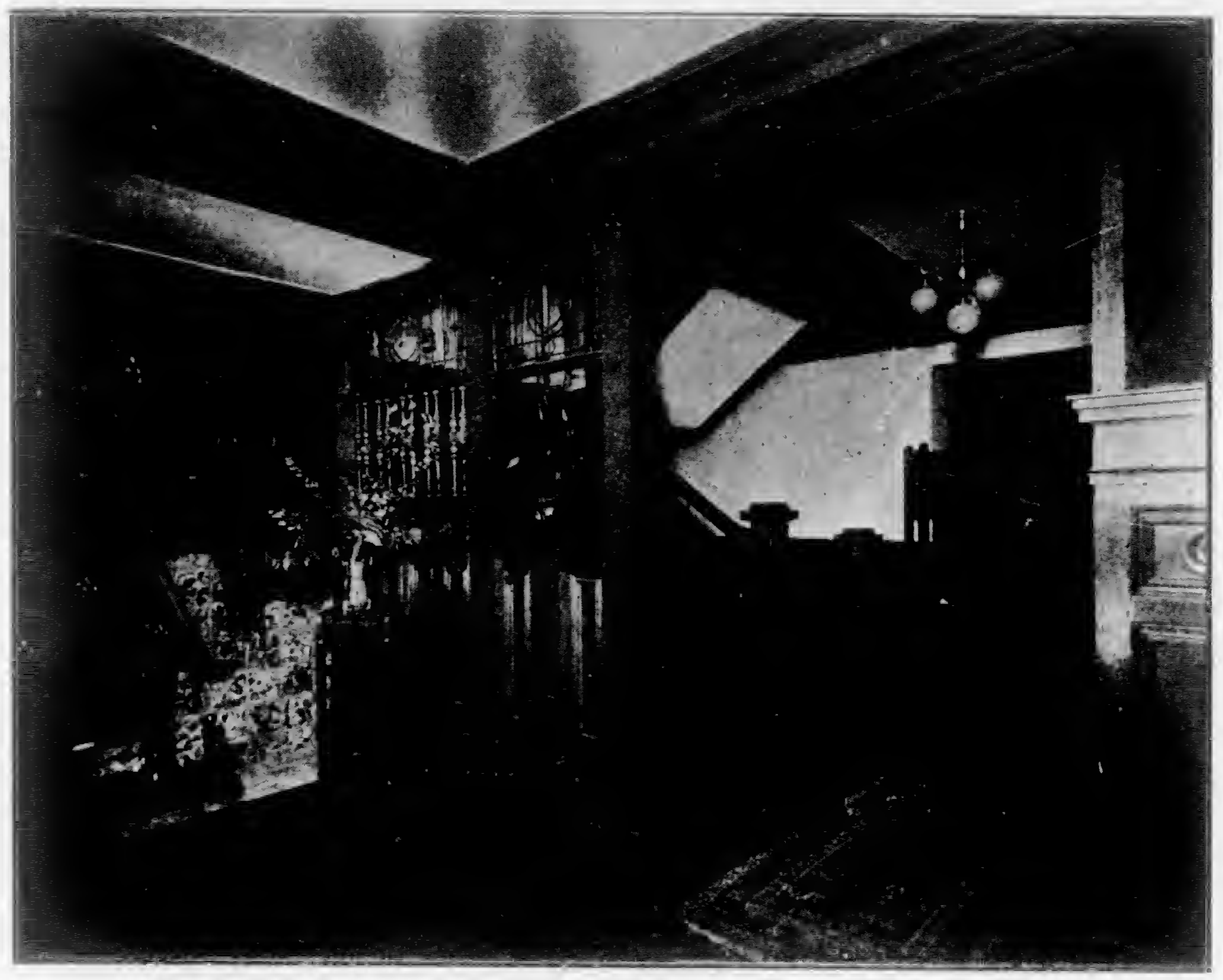
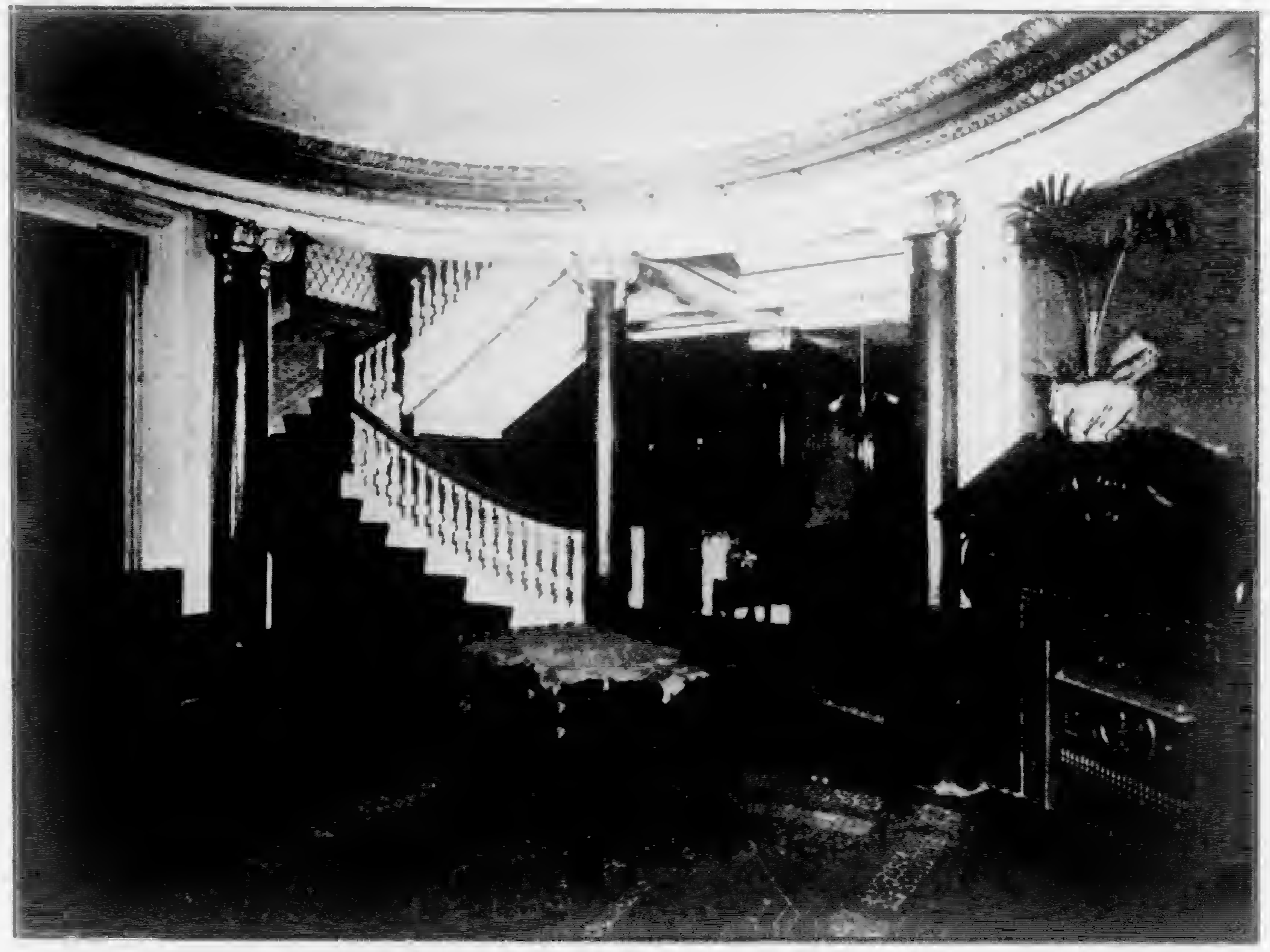


Entrance Hall, Apartment Hotel
Sutton & Weeks, Architects



Entrance Hall, Apartment Hotel, Pine Street, San Francisco
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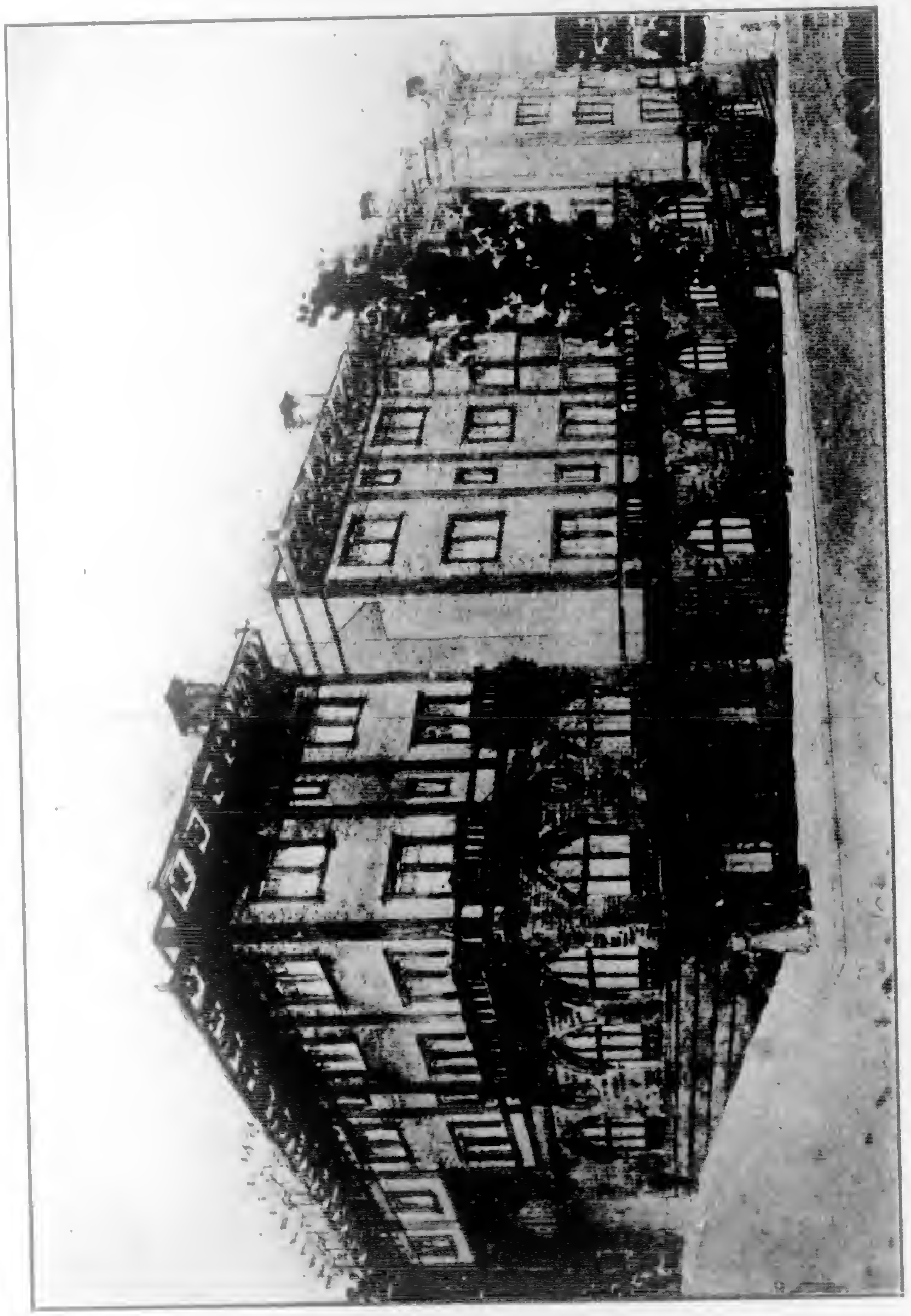
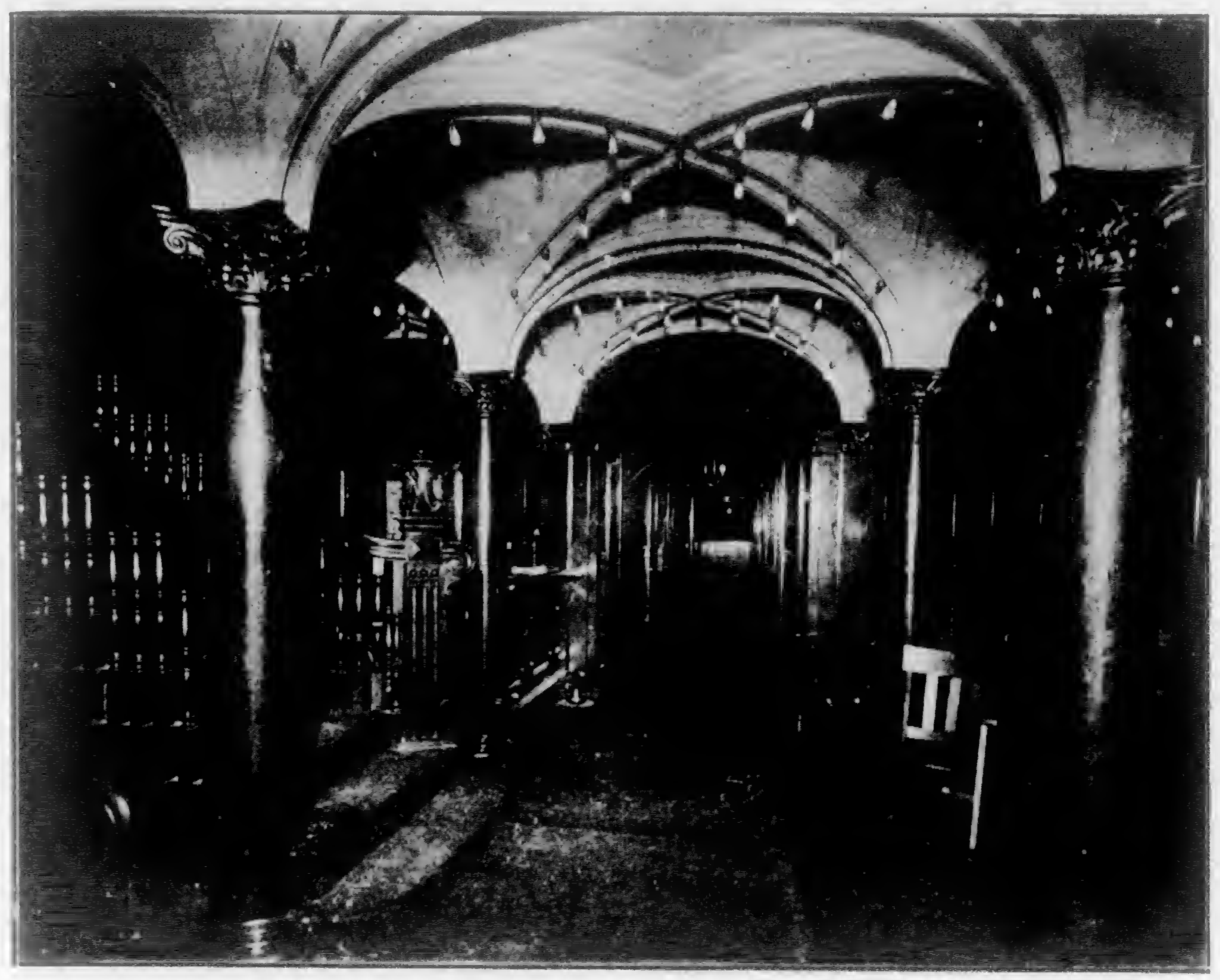


Apartment House in Half Timber, Plaster and Brick, San Francisco
Sutton & Weeks, Architects



Entrance Hall Apartment House
Sutton & Weeks, Architects

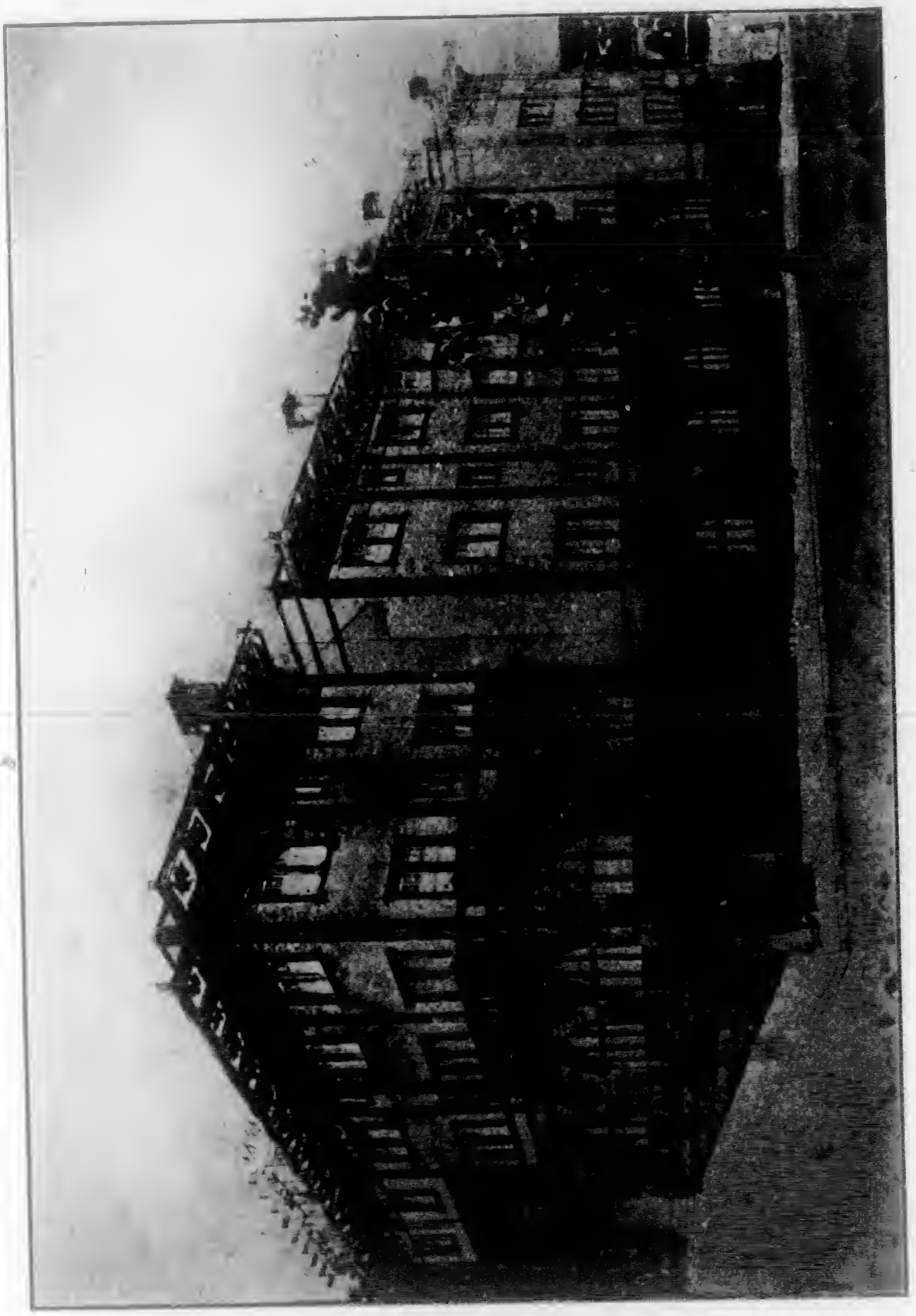
ment in New York is where several families combine to build one building, each taking a story and arranging it to suit his own needs and tastes, a common kitchen and corps of help serving all. Each apartment has its own pantry with dumb waiter, from which the apartment is served, the first story consisting of kitchen, banquet hall, garage, servants' quarters, etc. Wealth makes this a very feasible scheme.

San Franciscans up to the present time have preferred to build a home with their wealth, but I predict that in future many of our rich families will adopt the New York mode of life.

The apartment houses now being built in San Francisco are all of the Class C or wooden type, and are cheaper than fire-proof buildings even at the exorbitantly high price of lumber.

These same high prices are keeping many investors from building, hoping that the future will improve these conditions. The same demand and lack of supply that made California forefathers pay $10 for a loaf of bread, is causing these present high prices. Want forced the forefather to pay and necessity will force San Francisco to pay. But on the other hand the income to an extent justifies the larger expenditure.

San Francisco is crowded with new building companies and new contractors. The local building contractors deplore this, but it is to be a great benefit to the city if the local men will only learn the lesson being taught. The systematic way of handling a large job, the speed attained, the new manner of doing work, should be watched, studied, learned and repeated.



Apartment House in Half Timber, Plaster and Brick, San Francisco
Sutton & Weeks, Architects

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Apartment Hotel in Brick and Plaster, San Francisco
Sutton & Weeks, Architects

In the same way, Eastern architects are taking much work from the local men and this will be a benefit in the end. It will serve to raise the standard of architecture in San Francisco and those who survive the fight will be worthy to represent San Francisco in the architectural world and make her a recognized power second to none.

San Francisco's architectural past is that of a provincial city; her future is that of a metropolis.

Terra Cotta and Brick

What Constitutes a First-Class Paving Brick*

By WILL P. BLAIR

President of the National Paving Brick Manufacturers' Association

THE first pavement made with brick that I had the pleasure of seeing in process of construction in a roadway was witnessed by me a good many years ago. The brick were dumped from a wagon as you would dump a load of gravel. That does not seem so long ago, but rather yesterday—since upon yesterday, as it were, whole streets have been paved without a pretense of an engineer's services, and are practically dumped into a street, and even now it is not an unusual thing for brick streets to be built without the superintendency of an engineer. The services of an engineer was not thought necessary, and so not thought of at all in building the first brick streets in Illinois. For the same reason, and no better reason, the services of the engineer have been dispensed with time and time again, because it was not thought worth while. His skill and wages for the time seems to be thought of as being out of proportion for the importance of the job. A dollar and one-half to two dollars a day so-called inspector is often deemed sufficient pay, and such a person regarded as being fit for an inspector on streets for the same reasons that the boy could so highly recommended his dog, not being fit for anything else, he knew he was a good coon dog. Just why the public endures being trifled with in this respect is difficult of solution. It is a method that has grown into a practice for the reason that sufficient protest has not been lodged to remedy the evil.

A mile of brick street 36 feet wide costs, with the curbing, $40,000. It not unfrequently happens that cities and towns from twelve to twenty-five thousand inhabitants build two miles of streets in a single season, and $80,000 is expended practically under the supervision of the two dollar a day man. I ask what would be thought of your citizen neighbor who having determined to build a $40,000 residence, would do so without the aid and services of a most competent architect constantly superintending the job. No one knows better than gentlemen of the engineering profession that more money is wasted upon streets and roadways through incompetent superintendency than that of any public utility for which money is expended, and no one else than you feels more keenly upon the subject than the material man whose product is thus abused. So far as the brick manufacturers are concerned, I think I may say without the least degree of hesitancy that

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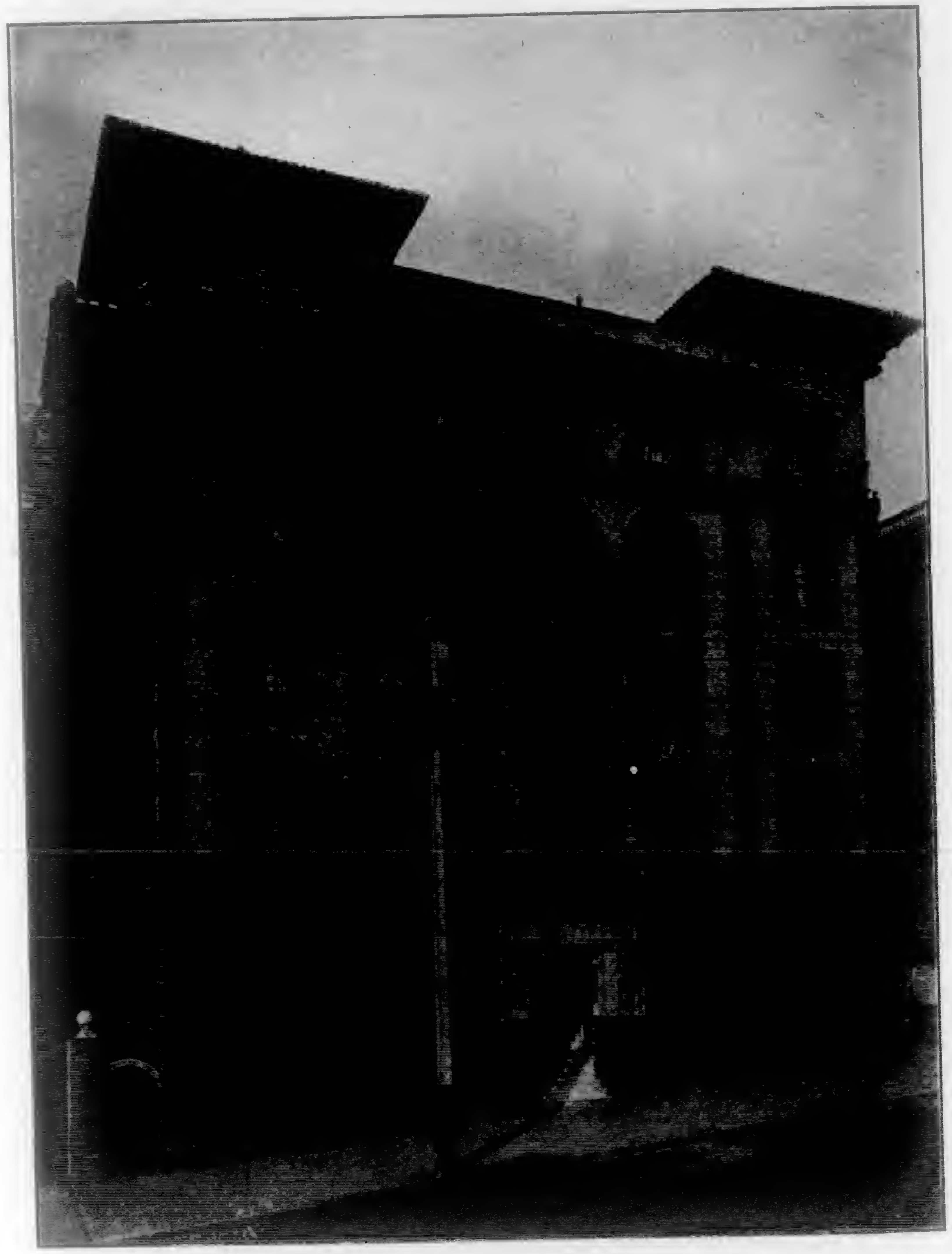
*Extracts from paper read at the Twenty ninth Annual Meeting of the Illinois Clay Workers' Association



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An architect's fee for superintending a $40,000 building would certainly be as much as three and oftentimes is as much as five per cent of its cost. In this day and age of the world, even a modest home is without its complement and necessary appurtenance when it is without a street, at least, in keeping with that home. The beauty, the utility, the comfort and durability from every point of consideration is as important in one case as in the other, and deserves equal care and attention. The interest of the vitrified brick manufacturer in the use of their product is co-equal with that of the engineer or property owner. We earnestly desire the co-operation and help of both, and we are willing at all times in recognition of that fact to help the cause of the engineer with all of the influence at our command. If professional ethics would bid them be modest, our material welfare is ready to supply the necessary obstrusiveness to set aside the practice that contributes to bad work, and put them where they belong. We only need to be taken into their confidence and quietly directed in the things which we may do, and I plainly confess that we do not wish the relationship to stop there. We desire to take them into our confidence. With the incompetent inspector we have our troubles. We do not know whether he really thinks us dishonest, or whether he does not consider it as a part of his duty to consider us dishonest or which, but do you think that we can take such a man on to our yard, explain our methods of burning; demonstrate where the good and the bad brick comes from in the kiln, where our own troubles lie, and of all the efforts that we put forth and as we put them forth to give to the cities the quality of the brick we have promised to furnish. We are not satisfied, however, with eliminating the incompetent inspector. Boards of trustees, city councils often so circumscribe the engineer in a way that he is not the responsible factor he should be; the final judgment and authority of the engineer is not supreme, but reserved by a body that possesses no element of technical learning—a doctor is called and describes, but some wiser council (?) determines whether or not the patient shall take the medicine. The authority of the engineer should be made supreme to make him forceful and independent. After an engineer's plans are accepted and approved, then he should be clothed with absolute power and authority to carry them out in detail. Where the engineer is given full control of the plan, specification and details of construction, the material with which it is to be done, we do believe that it would be to the interest to all concerned that the engineer visit the yard and the factory from which the brick are supplied; see the brick as they are made, as they are burned, assorted and shipped, where the overburned come from, and note the characteristics; likewise the underburned, the airchecked, the faulty made at the machine, the spoiled at rapid firing and of all the little details that separate the good from the bad.

As they gather some little information from us along these lines at such conference, we necessarily would learn a great deal from them.

What constitutes a first class paving brick is a question that can not well be answered in a few words. You are all well aware that we are wont to say and do say that a paving brick that will withstand the action of the rattler and not sustain a loss of exceeding twenty-five per cent, and one that will not absorb but from two to five per cent of its own weight is a good paving brick, but when you ascertain the quality of a brick by that process of testing, the brick itself is no longer fit for use. Then the test itself is only practical so far as it may serve by way of comparison to enable intelligent judgment to be passed upon similar brick that are expected to be used. I have before me some half dozen or more samples of first class brick of the various makes that seek a market in your state. I would say that all of these brick are first class, and meet the general requirements, and after placed in the streets of the cities and towns of the state of Illinois, under what we call good construction, it would be a rare exception where they will not withstand the wear and tear of an entire generation. I have before me here also an overburned brick, and underburned brick, a brick that is burned too fast, a brick that is spoiled in the mill, and brick that are otherwise defective, each having been manufactured by the same process; burned in the same kilns; of the same material and apparently received the same treatment as the brick that are good. The comparisons that I have here are each somewhat in the extreme. I believe it was your own immortal Lincoln who said that the way to learn most effectively by illustration and comparisons is by instancing extreme cases, and that is why I have brought these extremes to you. It does not require much stretch of the imagination for you to realize that there is a point where these two extremes meet, and it is the case with every manufacturer that between the good and bad there is a doubtful line. I think that you will find that it is the method of every first class manufacturer in giving instruction to his men upon whom he must depend to fill his orders that the doubtful line must be eliminated in favor of a good grade. If there is a doubtful line where these two qualities meet with the manufacturer with all his familiarity with the details, conditions and circumstances surrounding the making of the product, what can be expected in the exercise of the judgment of a man such as I have stated while acting as an inspector. This is the aspect that presents itself for your and our intelligent consideration, and this is the condition that led me to say, and is the father of the wish, that the engineers might be taken into our confidence and we into their confidence, and that is why I say to you that a visit to the factory of the manufacturer who supplies the brick that the engineer is expected to use upon any important street, will be to the decided advantage of both. In some cases it is largely the place of the kiln where the different grades come from. Again the quality may be determined somewhat by the color and, as is sometimes the case, by the weight alone, mill insufficiently fed, quantity of clay lacking inside of the brick, the outside appearance perfect in form and perfect in burning. In the latter case the fault of the brick is only detected after it is placed in the street and subjected to the weight of the roller. But no two brick of the entire lot before me are of the same color, nor do any two present the same appearance so far as fracture, density, burning, or anything else as it appears to the eye make the two alike. Each is totally different, and made from slightly different clays. A visit to one yard will not equip one thoroughly in judging the quality of the brick from another yard, so I would say if it is possible, as each factory supplies a street from time to time, visit each factory, inspect the yard from which the particular supply of brick are to come.

I have with me also two or three specimens of first class brick that have been in use. One specimen taken from under the wheel track, having been in use a little more than fifteen years. This specimen of brick is similar in quality to the No. 1's that I have before me, but it was placed in the street under proper construction. I have a corresponding sample precisely alike in quality, but placed in the street carelessly and not in accordance with the plans and specifications we recommend. The wear on the two specimens were as nearly alike as it is possible for conditions to be in two different places on the same street; both were from under the wheel track, but you readily see one is a total wreck, while the other is not preceptibly worn. I have another specimen taken from another street that was in use 12 years, sustaining the traffic under heavy loads daily, and in that entire time many loads that passed over it weighed more than 12 tons. I was unable to procure a mate for this sample—construction under bad conditions—for the reason that on the entire block from which this was taken, no more apparent wear was found anywhere. These brick we furnish in proof of the statement often made, that the older the brick street, in case of proper construction, the better it is for all purposes for which it is built. Bridges collapse, buildings fall, streets fail. There are failures in all engineering problems, but almost without a single exception the failure is due to misconstruction or a misapplication carelessly or otherwise of the plans and specifications made by the engineer. You ask me, why this special plea for competent supervision? I think I have already given you the answer. What constitutes a good paving brick is one that is properly laid in the streets.

* * *

San Francisco in Ten Years

ROSY pictures of San Francisco as it will appear ten years in the future were painted recently by Willis Polk, who has charge of $4,000,000 worth of reconstruction work there for D. H. Burnham & Co. A population of 1,000,000, more beautiful buildings, better streets and parks, more adequate fire protection, a pure water supply—these are but some of the things included in his prophecy. He adds to these the assertion that the city will manufacture and ship more goods by that time than would have been its portion in all time had not the earthquake come to change its history.

Mr. Polk is a member of the "committee of forty," all that is left of the now famous "Committee of Fifty," which, under the direction of Mayor Schmitz and General Funston, met within three hours after the great disaster and drafted a set of drastic emergency laws for the government of the frightened people of the stricken city.

"What the Chicago fire did for that city the San Francisco earthquake and fire did for the coast city," said Mr. Polk. "Figuring that $300,000,000 worth of buildings were destroyed in the conflagration, all of which will have to be replaced, and that it will take an expenditure of $200,000,000 more to meet the great demand for new buildings and improvements, I estimate that it will take ten years to obliterate all traces of the fire. This will mean an expenditure of approximately $50,000,000 every year in building alone.

"The permanent building has begun, plans have been made for approximately $20,000,000 worth of buildings to be constructed within the next few months. Many of the temporary shacks have been destroyed.

"That reminds me that the people in the East greatly misapprehend the effects of the earthquake. It was found in all but two per cent of the cases examined that wherever a building had a good foundation, and was properly built, it suffered nothing from the quake. For a time there was a decided 'boom' in reinforced concrete construction, but the effects have all worn off now. All the large contractors have returned to the old legitimate steel-frame properly protected buildings."—Building Management.

Artistic Brickwork*

By J. M. WHITE

Dean of the College of Engineering, University of Illinois

I HAVE selected the above subject because I feel that you must all be interested in promoting a truer appreciation of the artistic possibilities of brick masonry. You have made good brick, the best that can be found in any market and in ample variety of size and color; your next duty is to see that people are taught how to use them to the best advantage. Many of our architects, almost the entire public, the majority of the masons, and even the brick manufacturers, need to be educated on this point. The public does not realize at how slight an expense a monotonous brick wall might, by a variation in texture or color of the material, have been made interesting if not really attractive.

Brick is regarded as a cheap material and it therefore receives a cheap treatment. Its strength, durability and fireproof qualities are recognized, but attempts at artistic effects, except with pressed brick, are looked upon as questionable experiments.

We can improve conditions only by educating people all along the line. The architect, who would be the most important factor in raising the standard of public tastes, receives plenty of encouragement from the manufacturers and artists, who create, but scant co-operation from the mechanics who must execute the work. It is for just this reason that the aesthetic standard of modern brickwork is so much lower in the United States than in England, France and Germany. Many architects have given up in despair and accepted work which stands the test of the line and plumb and is "free from solecisms and mistakes, but in which all the virtues are negative and which is devoid of character and life."

The receptivity of the mechanic is a force which has much to do with the general development. The mason's sole ambition is to cultivate dexterity, and it is usually done at a sacrifice to those effects which, though largely accidental, are expressive of his artistic sense in selecting and grouping the individual bricks.

I have often wished that the Masons' Union, in order to stimulate pride in artistic as well as mechanical excellence, would establish an Honorary Order of Craftsmen, a sort of first degree, to which no one would be admitted who did not appreciate the artistic side of his work. Among the older civilizations of the world, I presume that a large majority of the mechanics would be included in such a class. "Education, like the mass of our age's inventions, is, after all, only a tool; everything depends upon the workman who uses it."

Artistic effects can not be obtained by rule, and though we hear it said that designs must always be related to the material in which they are executed, that we must always bear in mind the capacity for appropriate expression of the material with which we are working, that we must use it in a proper manner and keep it in its natural sphere, bearing constantly in mind its possibilities and its limitations, we do not feel much wiser as to our own method of procedure, even though we recognize that there is truth in the statements.

It is true that stone is better suited than brick for monumental buildings built upon large lines and employing heavy masses of material. The natural use of wood is for work that employs the stick straight, though more or less carved and ornamental. Metal is susceptible of twisting and bending and hence is the natural material to employ where such effects are desired. Glass in its finished state should express the lightness of a bubble and is more appropriate when blown into light feathery shapes than in the form of cut glass.

It is easy to enumerate some things we should not do, but difficult to say where to draw the line. Some excellent architects will not use either pattern brickwork or moulded brick. Personally, I admire both in their proper places.

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*Extracts from paper read before the Convention of the National Brick Manufacturers' Association, held at St. Louis, Mo., February, 1907.

The Brick Situation in San Francisco

THE brick men say they just cannot keep up with orders. The demand would not exceed the output under ordinary conditions, but there are several reasons to account for the present inability of the manufacturers to supply the market. Besides the unprecedented call for brick occasioned by the rebuilding operations, the dealers have been handicapped by shortages of fuel oil, coal and wood, and absence of even fair transportation facilities. Prices have advanced, but expenses of every kind, including labor, fuel, freight on brick and cartage in the city have increased considerably.

The soft mud brick plants in the Standard Brick Association have been closed since November, as usual, and the extremely rainy reason detained all of them from making an early start this year and taking a chance in order to secure some of the big orders that are in sight. They usually resume molding brick about April 15th.

The present difficulties in the way of transportation would probably prevent successful delivery of greater quantities of brick to the builders in the near future anyhow. The San Francisco wharves are so clogged up with lumber and other bulky stuff that the brick men are unable to find a place to lay their bricks after they have brought them to the city in scows or other vessels. There are a few exceptions, but storage space is very hard to find.

The mud brick yards have been burning brick during the rainy season that were made in the fall and stored in sheds. Many of the yards have large quantities of brick on hand, largely sold, which they cannot get transportation for, and hence the owners are not very enthusiastic over rushing the business. On April 1st, 500 carloads of brick were on the Southern Pacific railroad in the fifty miles between San Jose and San Francisco. Some of the cars were loaded two weeks prior, but the contractors who bought the brick could not get them. The Remillard Brick Company's yard at Pleasanton is choked up with burned brick on account of lack of transportation. Its yard at Greenbrae is closed down for lack of wood for fuel.

Prices of common brick have advanced to $12.50 a thousand and some are holding for $1 more. Considerable quantities of brick have been sold at the figure mentioned. However, a large concern that manufactures brick in Sacramento and has 30,000,000 brick sold, got $10 for the greater portion when the orders were taken. A year ago, common bricks were sold as low as $6, but expenses of production were then much less. Machine cleaned bricks from the ruins in the burned district are now selling at $9 to $10 and are in great demand. Sand-lime brick are quoted about the same as common, and there is a fair demand.

A representative of Gladding, McBean & Co. recently said to the correspondent for Clay Worker: "The present shortage is largely due to the fact that we had to shut down last month. We are getting oil now, however, and have just finished two new kilns that will supply 80,000 brick per month each. We hope to get our heads above the flood of orders before long. The demand is tremendous and shows how much is being done to rebuild the city."

W. E. Dennison, manager of the Steiger Terra Cotta and Pottery Company, said recently: "We have orders on hand to run us six months, and cannot agree to deliver brick to new customers in ninety days. The present shortage in pressed brick is due to the overwhelming demand now existing in San Francisco, and to the fact that during January we could get no oil, had to shut down and ran behind."

Grove Street School, Oakland
F. D. Voorhees, Architect

Convention of the Architectural League

A CONVENTION of the Architectural League of America was held in Washington, D. C., April 22d, 23d and 24th, under the auspices of the Washington Architectural Club. The clubs participating were: The T-Square Club of Philadelphia, Cleveland Architectural Club, Toronto Architectural Club, Pittsburg Architectural Club, Twin City Architectural Club, Chicago Architectural Club, Detroit Architectural Club, St. Louis Architectural Club, Washington Architectural Club, Architects' Club of Urbana, Ill., National Society of Mural Painters, Natural Sculpture Society, San Francisco Architectural Club and the George Washington Architectural Club of Washington, D. C.

The Boston Architectural Club, Memphis Architectural Club and the Portland (Oregon) Architectural Club were also represented at the meeting.

Among the more important matters taken up at the meeting were the question of individual membership in the League; the transfer of members from one club to another; the establishment of the office of permanent secretary; traveling scholarships; fellowships in the Architectural Schools; and the question of fuller preparation on general educational lines for entrance to professional schools, and less general and more special work in the professional schools.

A number of papers of special interest were presented by eminent architects.

Tallest Brick Chimney in the World

THE Alphons Custodis Chimney Construction Co. of New York has just received a contract to build the tallest chimney in the world—in fact, the tallest structure of any sort save the Eiffel Tower and the Washington Monument—from the Boston and Montana Consolidated Copper and Silver Mining Co. at Great Falls, Mont. The chimney will rise 506 feet above the top of the foundation, and will have an internal diameter at the top of 50 feet. The size of the chimney has been proportioned for leading off 4,000,000 cubic feet of gases a minute, with a maximum temperature of 600 degrees F. The gases consist mainly of SO_2 from the smelter furnaces, and will travel 2000 feet through flue ducts before reaching the chimney. The chimney is designed so that an additional sixty feet may be put on at any time in case additional draft is desired. The point where the chimney is to be built is 3,535 feet above the sea level, and on account of the exposed location and the strong gales in Montana the chimney has been designed to withstand a gale of 125 miles an hour.

Assuming a unit weight of 116 tons per cubic foot of brickwork, the maximum pressure at the foot of the chimney, due to the dead weight and the wind pressure, is computed at twenty-one tons per square foot. There will be four flue openings in the bottom of the chimney, each flue having 528 square feet of area. The entire chimney is to be lined with Custodis sectional lining, laid in acid-proof mortar. The present common brick chimney at the smelter, which is 186 feet high by twenty feet in diameter, has cracked badly, on account of the influence of the SO_2 gases on the cement mortar. In designing the new chimney, special care has been taken to have it resist the influence of the sulfuric acid gases. The sectional lining will consist of a 4-inch acid-proof brick laid in acid-proof mortar and separated from the main wall by an air-space of two feet.

To prevent the flue dust from settling behind the lining, special form bricks will be employed and all spaces at the top of each section of lining, through which the dust might find its way, will be closed with mineral wool. The top of the chimney will be protected with a terra cotta cap with overlapping edges laid in acid-proof mortar. As the heavy gases will fall in rainy weather alongside of the chimney, the upper part of the outside brickwork will be pointed up with acid-proof mortar; also the outside ladder and lightning rod will be protected against the influence of the acids.

The total dead weight of the chimney is estimated at 17,000 tons, and if common brick was employed, it would require about 6,000,000 bricks to build the chimney. To scaffold this chimney from the inside will be quite a feature, and four elevators run by electrical power will be employed to carry up men and material. The foundation will rest on rock and consist of circular concrete walls thirty feet in height with an outside diameter at the bottom of ninety feet. The pressure produced on the rock due to the dead weight and wind pressure is computed at 7 tons per square foot.

A new brick yard will be built especially for the purpose of manufacturing the required perforated radial brick, and the plant will be so constructed as to obtain an output of 100 tons a day. The entire brick plant will be run by electrical power derived from the waterfalls of the Missouri River. An aerial tramway will be constructed to transport the material from the brickyard to the chimney, as the brickyard will be at a much lower elevation than the chimney. The Custodis Co. expects to finish the chimney in about one year's time. The contract price without foundation is in the neighborhood of $200,000. The tallest chimney in the world at present is the 460-foot chimney at Freiburg, Germany, so that this new chimney will beat the record by just 10 per cent.—The Engineer.

Cement and Concrete

The Roadbed of the Future

Durability and Rigidity of Concrete Promises Practical Solution of Difficulties now Encountered---Will Make for Economy and Comfort of Traveling Public

By J. W. SCHAUB, M. Am. Soc. C. E. in Cement Age

AS civilization advances we learn by experience that permanency in the construction of our works proves the best safeguard against waste. This applies to our pavements for streets, our buildings, our bridges for highways and railways, and in fact everything constructed for the benefit of mankind. But more particularly does this apply to the roadbed and track for railways, which must continually be adjusted and repaired to counteract the destructive agencies of nature, and the constant action of the passing loads.

Upon looking over the reports of several western railways we find the cost of maintenance of track and renewing ties and rails to be about $600 per mile. On some of the Eastern roads we find the cost to run as high as $2000 per mile. To put the case in another way, almost one-sixth of the entire cost of operating the railways in the United States is expended in the mere care and renewal of the track. For the year 1905, this amounted in round numbers to about $150,000,000. This does not include, be it noted, other expenditures in the maintenance of way, such as fences, bridges and culverts and repairs for other purposes.

As railways are constructed today, we find the rails laid on wooden ties, and held in line by spikes which are driven into the ties by the aid of the eye and main brute strength. If the spike is not in line it is knocked into line, or, it is drawn out, the hole in the tie is plugged up and then the spike is redriven. At best it is a crude process, but what happens after the spike is in its proper place? First, we see that the yielding action or wave motion of the roadbed loosens the spike and then the first lateral pressure on the rail throws it out of line. The spike is then ready to go through the same operation as when it was first driven.

The first departure from the present practice, which should be adopted, should be the elimination of the spike, and in its place a screw spike should be used, such as is now in common use in France and Germany. This spike preserves the timber against any unnecessary cutting, inasmuch as the hole for this spike must be previously prepared by an auger.

On most of our modern railways the ties are laid in rock ballast. Moreover, in some cases we find the tie plates inserted under the rails to preserve the ties against indentation, and give the rails a stiff and unyielding bearing, and thereby preserve the alignment of the rails. This is approaching the idea of a permanent track and roadbed, but does it reach it? If the spikes are for the purpose of keeping the rails in line why use spikes? If the ties are designed to give an unyielding support to the rails why use wooden ties? If the roadbed is affected by the elements why leave it exposed to the weather?

The usual argument against an unyielding roadbed is offered by the railroad manager about as follows: He says the track must be elastic, otherwise the rails would be destroyed or broken and therefore the present form of track must be maintained. Yet this same manager will order the heaviest rails to be placed in the track, to be supported on the heaviest ties that he can procure, and laid on the deepest ballast to make an unyielding roadbed as near as can be by such devices. Now, if we would go a step farther, and with the ballast surrounding the ties make a concrete roadbed by filling the voids in the ballast by means of a Portland cement mortar, he will have obtained what he is striving to get and can never reach. To be sure it is not proposed to build a permanent roadway by such methods, but this is merely offered as an illustration to show the fallacy of the argument against the unyielding track. To be sure such a roadbed would be affected by the weather, but what argument could be offered against such a roadbed if it were absolutely drained from all moisture?

The greatest destructive element which our present form of track has to resist is the inertia of the moving load which passes over it. If it were possible to build a track to absorb this impact and vibration of the moving load, the destructive action would largely disappear. This is to some extent accomplished by the ballast in our present form of track, but only in a primitive way, when it is considered that the ballast is merely a mass of broken stone having no cohesion whatever except that which is obtained by the friction of its particles on each other. The writer begs to refer here to a design for a permanent roadbed and track for railways which is now under consideration by the Rapid Transit Commission of the City of New York in connection with the proposed extension of the subway; and, also, by the commission appointed by the Pennsylvaina Railroad Company to build the tunnels in and around New York. This design contemplates a concrete roadbed, which is divided, for practical reasons, into two parts. A substructure is first prepared, upon which the final superstructure is to rest. This substructure will have to be designed to meet the conditions in each case; for instance, in a tunnel having a rock cut this substructure will, in many cases, be merely a thin layer of concrete to level off the bottom of the cut. On earth embankments, which are not settled, it may be necessary to build supporting walls in some cases, and in other cases it may be necessary to drive concrete piles. In any case it is contemplated to give the substructure an unyielding support.

ESTIMATED COST PER MILE OF FOUR TRACK CONCRETE ROADBED READY FOR TRACK RAILS

Concrete 2.8 cu. yds, @ $5.00	$14.00 per lin. ft.	
Timber, tie rod, etc @	4.00 per lin. ft.	
Drainage, @	2.00 per lin. ft.	
Gross cost per mile, 5,280′x	$20.00	$105,600.00
Deduct salvage on present tracks		10,000.00
Net cost per mile		$95,600.00
$95,600.00 @ 4 per cent interest, per annum		3,824.00
Assume maintenance of present tracks, per annum		$5,000.00
Assume renewals of present four tracks, per annum		2,000.00
Assume Total maintenance of present four tracks, per annum		$7,000.00
Assume maintenance of proposed four tracks	$400.00 per annum	
Assume renewals of proposed four tracks	600.00 per annum	
Assume Total maintenance of proposed four tracks, per annum		$1,000.00
Assume saving in maintenance per annum		$6,000.00
Assume interest on investment, per annum		3,824.00
Then net saving per annum per mile of four tracks		$2,176.00

After the substructure has been properly laid, the next step is to place the track in position. This consists of the rails and their supports, which are longitudinal timbers, creosoted, temporarily supported on wedges to give the proper surface to the track. The alignment of the rails is maintained by means of transverse rods, spaced 24 inches center to center, passed through the timbers. The rods pass through a gas pipe having a washer at each end to adjust the alignment of the track. Any superelevation of the rail is obtained by means of temporary wooden wedges placed under the longitudinal timbers. After the rails have been placed in position by means of instrumental work to a mathematical accuracy, the space between and under the longitudinal timbers is filled with concrete, forming a superstructure upon the previous superstructure. An open conduit may be formed in this superstructure to accommodate any wires for electrical purposes, and at the same time save some concrete.

The salient features of this design, are: First, the support of the track rails is not formed until after the track is in its final position, so that no accuracy in the surface of the substructure is required. Second, when it becomes necessary to renew the timber supports, the same can be removed without raising the rail. This is a serious problem which has yet to be solved in the present subway in New York. Third, no attempt is made to hold the track rail rigidly to the concrete, either vertically or horizontically. The timber serves merely as a support or cushion for the track rail, for any vertical or horizontal force applied to the head of the rail is immediately transformed to the timber below, which is made of such dimensions as to absorb any energy of this kind. This timber does not perform the duties which the cross tie is now called upon to perform inasmuch as no bending action takes place. This means that we can use timbers inferior in strength to the timbers now used in cross ties, therefore, this timber will not be so dense, and can be properly charged with oil in the process of creosoting. Any impairment in the strength of this timber, which all timber suffers by creosoting, will be of no consequence, inasmuch as the work that this timber is called upon to perform does not involve a question of strength.

The space outside of the timbers and between the tracks is to be filled preferably, with a rock ballast to give inertia to the roadbed. This space may also be filled with a paving of brick or stone or other suitable material laid on a bed of sand; or, in some cases, it would be preferable to omit all the ballast and hereby facilitate the drainage of the track. Especially is this true in the case of single track tunnels where the ballast outside of the rails will be an objection. Drainage is provided for under the roadbed at proper intervals.

The estimated cost of four tracks built on this form of construction, given on the plan herewith, shows in round figures a net cost per mile for four tracks of about $100,000. This may seem a very exorbitant figure, but when the saving maintenance is considered, to say nothing of the saving in repairs to motive power and rolling stock, this excessive course is converted into a saving. Moreover, the comfort in riding over such a track, which must necessarily be free from dust and noise, is apparent. With this form of roadbed, weighing practically as much per linear foot as the heaviest moving load passing over it, with steel cars provided with concrete floors to deaden the noise, there is no telling what comforts we may yet have offered to us on the concrete roadbed of the future.

* * *

A Whistler Anecdote

MR. FREDERICK KIPPEL tells this amusing story of the always eccentric artist:

"Yet I myself was eye-witness to a curious bit of insincerity or artistic satire on his part in his own studio. The first day I spent with him he received a visit from a foreign artist, an old acquaintance, with whom he had not as yet quarrelled. After a cordial reception, one that seemed genuinely cordial, the visitor, artist-like, went about the studio looking at everything. He seemed especially charmed with a small picture, and after standing before it for some time remarked, 'Now, that is one of your good ones.'

" 'Don't look at it, dear boy,' said Whistler, airily. 'It's not finished.'

" 'Finished!' exclaimed the visitor. 'Why, it is one of the most carefully finished pictures of yours I have ever seen.'

" 'Don't look at it, dear boy,' persisted Whistler. 'You are doing injustice to yourself. You are doing injustice to my picture, and, what is more, you are doing injustice to me.'

"The visitor looked bewildered, but Whistler in a theatrical tone cried out, 'Stop, I will finish it now!'

"Whereupon he procured a very small camel's-hair brush, fixed it on a very long and slender handle, mixed the least little speck of paint on his palette, dipped the very tip of his brush into it, and then, standing off from his picture with the action of a fencer with his rapier, he made a forward thrust and touched the picture in an almost infinitesimal spot with his pigment.

" 'Now it is finished,' he exclaimed, 'and you may look at it.'

"All this was highly dramatic and capitally acted, for, after all, it was acted, as what happened afterward shows. For, some time later, I met the foreign artist again, and he told me that he had left his umbrella behind him, and, calling for it the folloiwng morning, was told by the servant, who recognized him, that Mr. Whistler had gone out, but that he might go up to the studio and look for it. He found it, and also found out something else. For, stopping once more to look at the picture which had been 'finished' for his especial benefit the day before, he saw that the little dab of wet paint which Whistler had put on so dramatically had been scrupulously wiped off again."

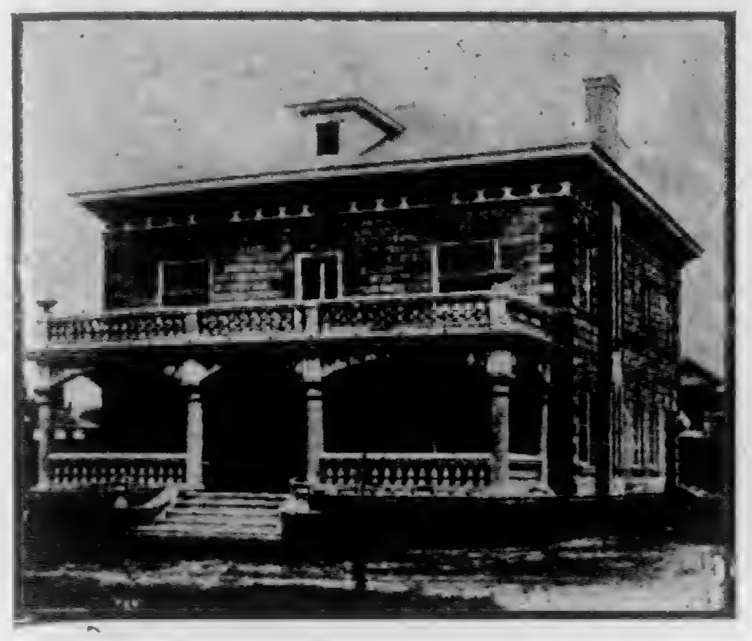
* * *

TODAY

Lives of some great men remind us
That we will, if we are wise,
Leave our modesty behind us
And get out and advertise.—Judge.

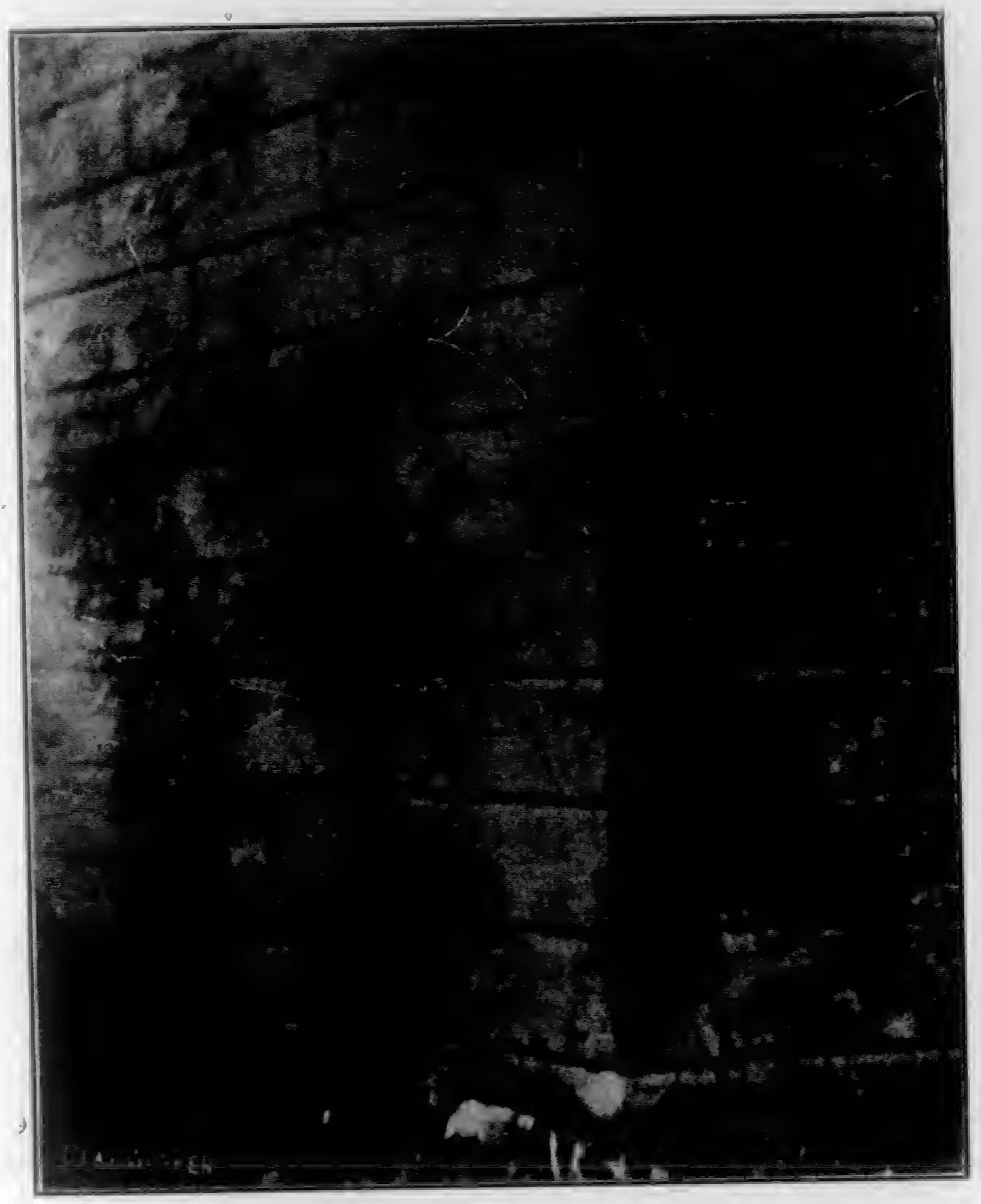
Cement Blocks

Reasons Why They Will Never Come into General Use



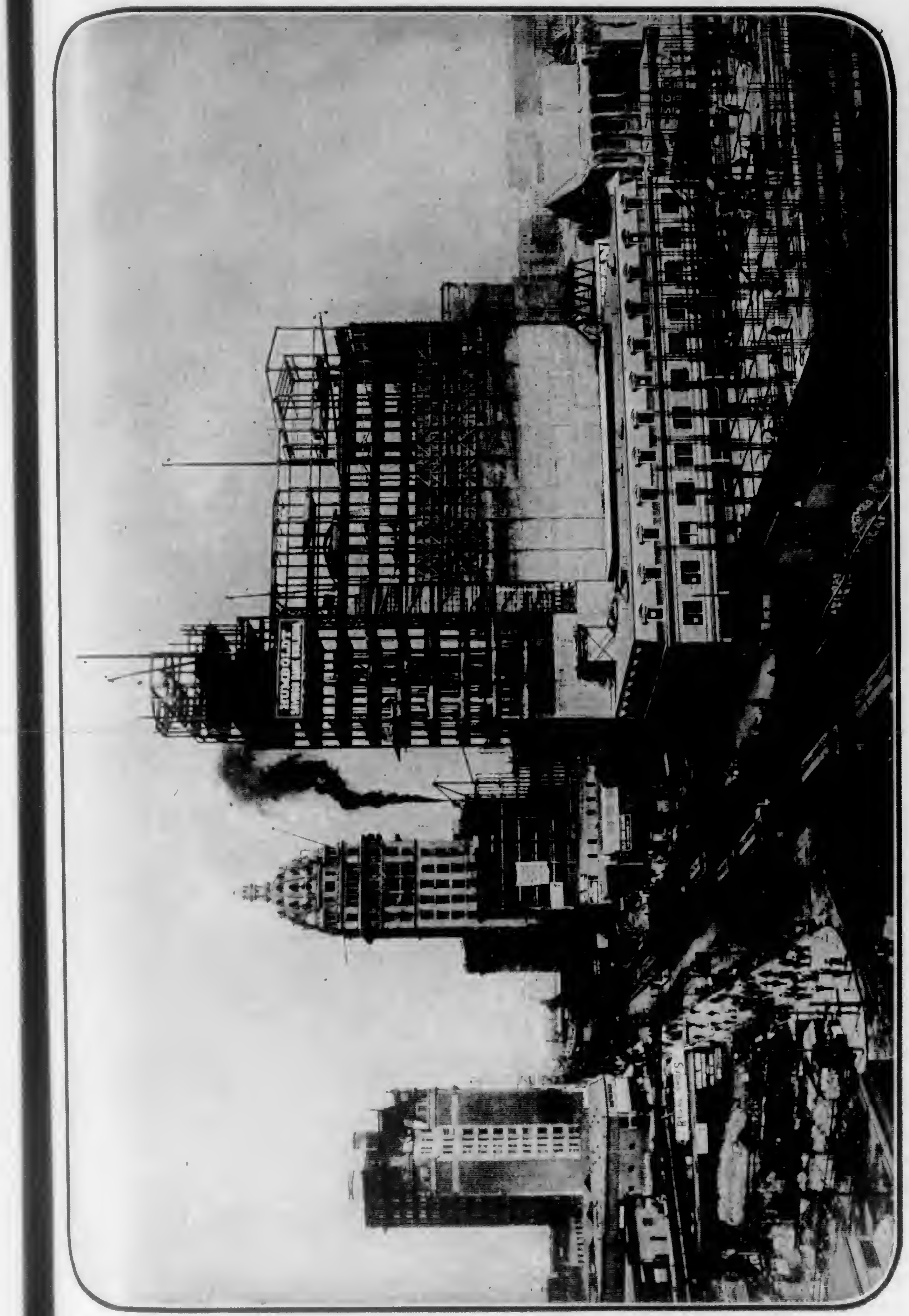
THE more the question is investigated the less the clayworkers have to fear the inroads of concrete construction. Any new thing causes some of us a certain amount of anxiety. To be sure, the use of concrete in building construction is by no means new, though relatively new uses have been made of it. The cement blocks, which it is affirmed that any one can make in the back yard or under a shed, or any place where sand and gravel are accessible, threatened at one time to have some influence on the brickmaker, but the more the cement block is understood, the more generally it is used, the fewer friends it has. A few years ago, there was a cement-workers' convention in Indianapolis and it was very thoroughly given up to the makers of cement block machinery. Much was claimed for it and, in truth, the idea was well promoted from the promoters' standpoint. The year following, the cement users had their convention in Milwaukee and the proceedings were made up very largely of discussion as to cement block problems. The character of the block, from the structural standpoint, has never been satisfactory and, while the proceedings of the first convention were largely made up of prophecies and expressions of hope and encouragement, the second convention at Milwaukee, was based on the troubles of the previous year. The proceedings of that convention would indicate, as they did, that these blocks are a very poor building material. Structurally, they are deficient, and the difficulties in the way of laying them properly were shown to be very great, if not insurmountable. When they were made for the purpose of carrying out a good design, their cost was so great as to place this material outside the market. But the greatest of their troubles was that which relates to the absorbing qualities of the block. Almost literally, the rain beat through the walls. The cement block building was damp on the inside. This difficulty was not made very conspicuous at the first convention, though it was discussed to some slight extent. It was more conspicuous in the Milwaukee convention and various dopes and preparations were suggested for rendering the block impervious. At the last convention, just held at Chicago, this feature was decidedly conspicuous and there were many concerns represented in that meeting who were offering solutions to the "humidity" problem, this feature, in itself, indicating the serious character of the problem. A number of the builders and engineers took up the cement block idea with some enthusiasm and considerable interest, but so far as the writer knows, among the architects, the cement block has not, at this time, one capable friend. Many who were desirous of specializing in the use of the cement blocks have been compelled, because of the character of the material furnished, to entirely abandon their use.

The artistic value of the cement block now is, and always has been nil. It was argued in the beginning of the recent history of these blocks that an artistic reproduction of various forms could be cheaply made and that a building having all of the beauty of form and color of stone could be readily secured through the use of this material; that any place where there was sand and



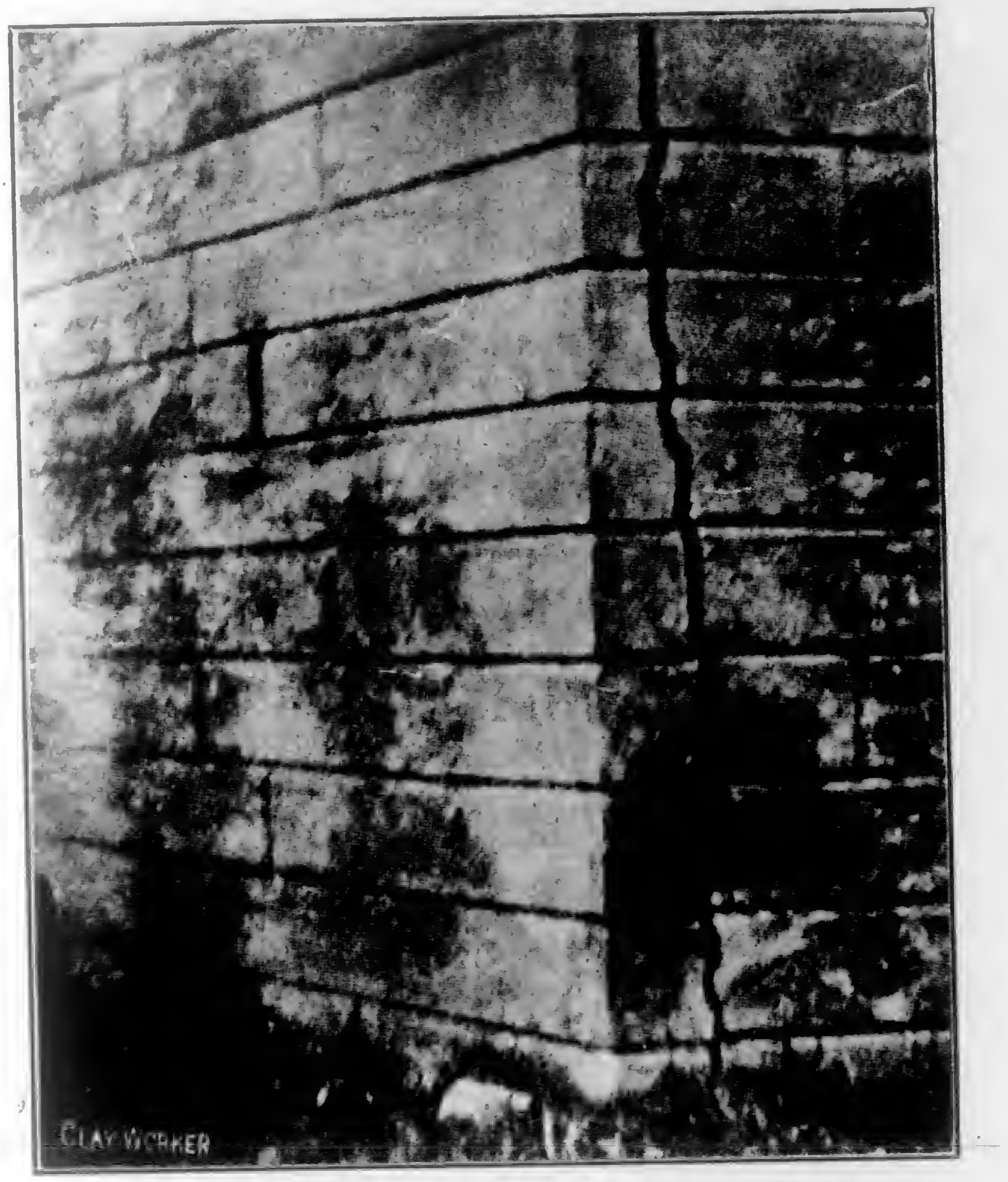
Section of a Badly Cracked Cement Block Building in Louisville, Ky.

gravel one could build a highly decorative and substantial structure which would have all of the interest of the cut-stone building. Some very good work has been done by one or two concerns, not with the hollow cement block, but with a cement stone composition which was cast in sand molds, but this was not the cement block ordinarily known in the building trades, but was a material requiring great skill and special preparation in its manufacture. The cement block which we now know is always associated with the idea of ugliness. The writer never saw a cement block building that was not ugly, and he never saw a cement block which a self-respecting architect or an ambitious builder would use in any building where there was any consideration whatever for appearances. The makers of cement block, as ordinarily understood, can not point to any building of decided artistic merit. This leaves out of the question altogether the matter of structural excellence. One great difficulty which users of this material have to contend with has been the difficulty of carrying out good designs. It is very expensive to make blocks of great varying size, either in height or in length, and no one wishes to conform the size and spacing of frames to suit a particular machine. There are relatively few plants in existence which can make the plan of the ordinary stone or brick building and carry out the design in cement blocks. This feature, alone, has been very largely instrumental in condemning the cement block idea. No architect cares to make his plans to fit a material. He prefers that the material should be made so that it will fit his plans. The condition, as it now stands, places the cement block out-



Market Street, San Francisco, April 1, 1907, looking East from the Junction of Ellis and Stockton Streets—Left to Right are the Chronicle, Mutual Savings Bank, Monadnock, Call, Kamm, and Humboldt Savings Bank Buildings—On the Extreme Right Foreground is Being Erected a Nine-story Reinforced Concrete Building, the Largest of that Class in the World.

Courtesy of Sunset Magazine



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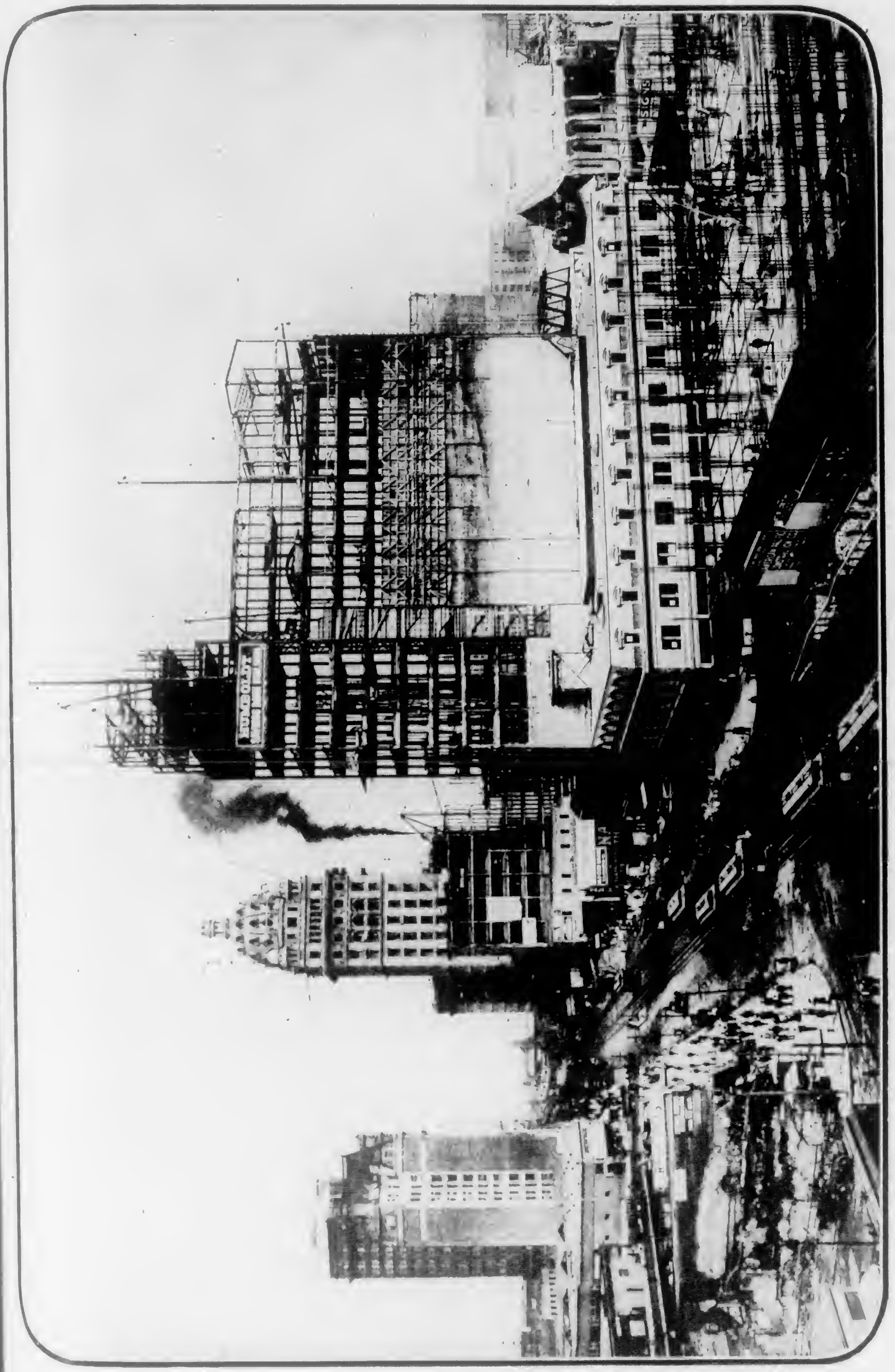

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Courtesy of Sunset Magazine

side of the range of possibility as a material which will compete with brick and stone. Saying nothing about this feature of the cement block idea, leaving out the question of the absorbent qualities, also that of form, who is it that ever saw a cement block that was not dull and dead and leaden in color? The cement block idea was received with a certain amount of interest because of its alleged cheapness and the promise of its excellence. The latter promise has not been fulfilled and it is neither as cheap nor as good as brick. The cement block will have a certain sort of pioneer existence for some time. It will continue to occupy new fields, but there is a limit even to this. The new fields having been exhausted, the market for the machines will have been exhausted. The cement block idea is passed.

At a recent meeting of the Engineering Societies of the State of Indiana, Professor Hatt, of Purdue University, remarked that the architects would have to reform their styles of architecture to accommodate the cement block. This was a remarkable acknowledgment coming from an eminent authority on the subject of concrete building materials. Of course, the architects will do nothing of the kind. To begin with, their spirit is unfriendly to this material because of its unsatisfactory history, and again, the architect is not fond of substitutions of this kind.

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The above article is from Clay Worker, a well-known Eastern publication devoted to the clay industry. Naturally, our esteemed contemporary is inclined to be prejudiced against any and all forms of building material that threaten to supplant brick or terra cotta. The Architect and Engineer is just as strong an advocate of brick as it is of concrete, but it thinks there are times when concrete is preferable to brick or terra cotta, and vice versa. There have been just as many brick failures as concrete, but not so much attention has been given them. The position of this magazine relative to reinforced concrete is too well known to call for an expression here. The purpose of reprinting the article from Clay Worker is to emphasize a point which the Architect and Engineer has endeavored to impress upon its readers for two years—that poorly mixed concrete, whether it is to be in the shape of building blocks, or straight construction, is to be shunned. There have been some deplorable examples of concrete failures because of poor workmanship, incompetent supervision and consequent bad construction. There have been some fearfully ugly attempts at cement block building for the same reason. Artistic cement blocks are as scarce in California as flies on a frosty morning. Tho Osborn residence in Fresno, built by the Worswick Street Paving Company, comes nearer to the artistic than anything thus far called to our attention. Some of the things which the writer in Clay Worker says are unfortunately only too true. There are some other things said to which exception is taken. If the concrete block industry is on the wane, the promoters themselves are in a large measure to blame. Architect and Engineer readers who have had experience with cement blocks are invited to write something for publication, and if they have photographs of their work, send them along.

The illustration in connection with this article shows a crack in a cement block building near Louisville, Ky. A poor mixture of cement and sand is given as the primary cause of the failure.

* * *

"Of course," said the architect, "you will want a porte-cochere." "Sure," replied Mrs. Nuritch, "we'll want a big one with glass dingle-dangles on it hangin' from the parlor ceilin'."—Philadelphia Press.

Paint Legislation in California

By H. T. JAMES

AN act was passed at the last session of the California Legislature governing the adulteration of paints, oils, etc. Legislation in connection with the paint question has been agitated in fourteen other states, and the ultimate result will, unquestionably, be a national paint law, and we trust the final result will be a comprehensive, intelligent law, covering the entire ground; one fair for the manufacturer, dealer and consumer, and for the mutual benefit of all.

The Paint Grinder's Association of the United States, or the Paint Manufacturers' Association have taken this matter up with the International Association of Master House Painters and Decorators of the United States and Canada, and they have appointed a committee to confer with the manufacturer's committee in an endeavor to obtain the passage of a national pure paint law, rather than have a variety of state laws.

All reputable manufacturers appreciate the necessity and the benefits to be derived from the passage of a national pure paint law, provided it is properly and intelligently drawn.

The questions to be considered, however, are complicated and varied: the intention of the California paint law was good but it is not practical, as it is fashioned upon the model of the national pure food law, the same as the North Dakota paint law, and the principles are entirely inapplicable to composite mixtures such as paint.

It is decidedly vague, and it will be difficult to predict the construction the Court will give it, due to the fact that this law undertakes to apply a definition of adulteration to artificially made compounds such as paint and varnish. Such a definition, while perfectly sensible when applied to articles consisting of a single element such as linseed oil, or articles that have an accepted standard, such as milk, butter, etc., becomes meaningless when applied to a compound or mixture which can be made from a variety of different ingredients in different proportions and in various ways, and to which there is no accepted or recognized standard.

Several States have seen of their own accord the absurdity of the North Dakota law, and bills introduced in these states have been labeling bills generally, and not bills undertaking to sanctify certain ingredients and exempting them from labeling as covered by the North Dakota law.

A national law should be passed that would secure full protection against that class of cheap, unreliable and dangerous paints which are widely advertised by mail order concerns, and which generally bear the name of some fake manufacturer, and at the same time will not compel the reputable paint grinder or manufacturer to disclose formulas which are valuable assets in their business.

A law which would require a label to only show the total percentage of inert extenders, or of thinners, other than Linseed Oil, Turpentine or Japan Dryer, and would not necessarily require the Grinder to disclose his formula; yet that would afford a reasonable degree of protection against fraud.

Every manufacturer knows it is an easy matter to cheapen paint almost indefinitely by overloading it with inert extenders, benzine, water or linseed oil substitutes instead of using pigments and vehicles of recognized paint value, as practically demonstrated by the manufacturers, and by most eminent paint chemists in the country.

The Union Ferry Depot, showing the Reconstructed Piers of Reinforced Concrete. Pacific Construction Company, Contractors

Heating, Lighting and Electrical Work

The Heating Equipment of the Modern Office Building

By GEO. W. NISTLE, in Building Management.

THE heating equipment of the office building is something which nature compels us to consider, and may assume such magnitude as to become the deciding factor in the general design of the mechanical equipment of which it forms a part.

To the uninitiated it seems to be simply, very simply, a matter of pipes and radiators. But even at this point we find some things to mar the great simplicity of the problem. Pipes or radiators, which shall it be?

The early days of steam heating knew in the equipment nothing of anything but pipes, the pipes which conveyed the steam through the rooms to be heated; and sometimes the outfit consisted of a single pipe run through the center of the room near the ceiling, which was nicely warmed, while on the floor and particularly near the windows everything was cold.

This one pipe system early proved to be inadequate and had to be divided and sub-divided to get the pipes where they would do more good. The one pipe idea dominated every subdivision and in order to get a sufficient pipe into the room to do the heating the pipe had to be zigzagged back and forth several times, compelling the steam to travel the greatest possible distance against the greatest possible resistance; naturally it sometimes got tired or used up before reaching the end. An improvement on this was to unite several pipes in one fitting at each end and thus shorten the distance and reduce the resistance. This scheme reached its climax in the box coil (a compact mass of pipes united at the ends and wandering back and forth between ends, placing an immense length of pipe in a few cubic feet). The interior pipes being surrounded on all sides by hot pipes had but little opportunity to warm the air of the room. Again the pipes were not beautiful and in offices had to be encased in ornamental screens which diminished their usefulness.

After a time some one developed the pipe radiator (a cast iron box base with short pipes screwed down into it in pairs, the top of each pair united by a return bend). Over the tops of all the return bends was placed a perforated cover with an ornamental cornice, making the radiator appear like a little pipe organ.

From this beginning the radiator has developed into the elaborately ornamented cast iron affairs of today with a continual drop in efficiency of such an extent that in blast heating (where the pipes are packed in a big sheet iron box and cold air forced between them where no one can see them) pipes are used almost entirely. In some of the most up-to-date office buildings in New York

The Union Ferry Depot, showing the Reconstructed Tower of Reinforced Concrete. Pacific Construction Company, Contractors

Courtesy of Sunset Magazine

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City the writer has recently seen pipe coils used in offices and must admit that in a place devoted to business the pipe coils are much more consistent than radiators.

Pipe coils and radiators are equally well adapted to operation on the various systems of piping in use.

Assuming that we are to use radiators and that the building has no power plant of its own, but must develop its own heat, we have on a larger scale the same problem that confronts the engineer in designing a heating system for a residence. We must have boilers. Generally in such a building these are best of the horizontal tubular pattern with plain settings, and each having on top a steam outlet to the heating supply main, and a return inlet below the water line. With a suitable system of distributing pipes (horizontal mains, branches and risers, vertical pipes), we have what is known among engineers as a plain gravity system, in which the steam rises by its own levity and the water of condensation falls by gravity, first to the bottoms of the radiators and then on down to the return inlet of the boiler. Very simple, but the water put in the boiler to make the steam is almost a universal solvent and carries with it about three per cent of its volume of air. The air is liberated by the evaporation of the water and goes with the steam through the pipes and into the radiators, collecting in the most generally unexpected places where its great non-conducting power makes it cut down the efficiency of the radiators to such an extent as to make them practically failures. A remedy for this was found in placing a small air vent operated by hand on each radiator. The occupants of the room were expected to open the vent and let the air out and then close the vent. It was frequently left open and when the air was all driven out it was followed by steam and sometimes water, which wet walls, floors and ceilings and was generally a nuisance.

All this trouble was supposed to be removed when an automatic air vent was developed. This was a little valve containing a thermostat which (by expanding when the steam got to it and heated it) closed the vent when most of the air was driven out. It opened again when cooled off, whether by the accumulation of more air or by the shutting off of the steam supply, and in the latter case the condensing of the steam enclosed in the radiators and piping at the time of shutting off made a partial vacuum in the system into which air rushed through all the open vents. Then the whole process had to be repeated, and as temperature changes were all that the valve recognized, it frequently allowed water as well as air to be expelled, thus making trouble. There are on the market at the present time automatic air vents intended to be free from all these defects, and they are when new. They let out the air when cold under pressure, close the vent by a float when water comes, and have a little check valve to prevent the entrance of air when cold under vacuum.

With a well designed and well cared for system of the foregoing type and having the latest improvements in valves and other fittings, very good results may be obtained in the building having no power developing plant of its own. In the building having its own power plant we have a different set of conditions.

Boilers in such plants seldom deliver steam directly to the heating plant and we may say ever receive condensation directly from it.

We generally have in such a plant engines for furnishing electric lights, pumps or engines for elevator service and pumps for house water supply. The exhaust steam from these sources of power is generally enough for heating the entire building in which thepower is used.

To force this exhaust steam through such systems of piping as we find in most buildings would require a pressure of from three to eight pounds per square inch. This as back pressure on the engines increases the cost of running them from fifteen to twenty-five per cent, which generally means an equal increase in the fuel account of the building.

Systems of piping can be and have been designed so that steam can be circulated through them at a pressure of eight ounces to the square inch. But in reducing the pressure we reduce the energy for driving out air, so that such plants frequently become air bound and as a result water logged.

When properly equipped with devices for removing air, and properly designed and kept in good condition such systems serve very well.

The great majority of them have in each a horizontal supply main into which are connected the exhausts of the different engines after all engine exhausts are gathered in, an oil extractor and feed water heater are inserted and the main is led around the basement near the ceiling. A connection is made (through a reducing valve) with the live steam main so that when engines are all shut down the heating may still proceed. The end of the main delivers (through a steam trap, valve or other steam restraining device) into a receiving tank. From this tank the condensation is pumped into the boilers.

From the upper side of the main are taken the branches leading to the risers that supply the upper part of the building, also the branches that supply the radiators on the floor immediately over the main.

From the risers are taken (at each floor on which radiators are located) the branches for the supply of these radiators.

From the end of each radiator opposite that where the steam enters, a pipe with a valve in it leads to a return riser (so called). These return risers deliver in the basement into a main almost parallel with the supply main, but sometimes laid near the floor to bring it below the water level in the receiving tank into which the main delivers. This prevents the backing up of the steam from one riser into another.

A vent pipe from the top of tank to atmosphere is generally applied and if any air can find its way down through the riser and along through the main and then up through the water in the tank it may get through this vent. But we believe that the radiator vents get rid of most of the air, not all.

A system such as we have described can be so designed as to work one-half pound pressure and give good results. The currents of steam and condensation being in the same direction, nothing is wasted in conflict. The removal of the air being generally from the upper part of the radiator is more or less incomplete.

A modification of the system is to take all the steam through a large single riser to the top of the building where the mains and branches are located and the steam fed down instead of up. The only conflicting currents are in the main riser going up while a small part of the condensation is coming down. This is not a very large matter and probably of less importance than the pushing down of the steam against its natural levity. However, both of these disadvantages may be offset by the getting of steam to the farthest radiators first. Still another advantage that does not appear in a gravity system but does in a vacuum return system is that the vacuum return as usually applied operates with its maximum power on those radiators that are supplied with the weakest steam pressure.

Another form of gravity system continues the supply main around the basement and without any restriction terminates it at the receiving tank or boiler if a live steam job. From the main the branches and risers run as in our first mentioned plant, but there is only one opening into the radiator for the steam to use in entering and the condensation to use in leaving; thus the condensation has to fight its way against the incoming steam all the way down to the main in the basement where the two currents flow in the same direction.

This system, like the two pipe systems first described, can be modified by having all the steam carried up through a main riser and fed down to the radiators. As the steam goes down the water also goes down, and there are (after leaving the main riser) no conflicting currents except in the radiation. However, as the amount of condensation in the riser is continually increasing there is a possibility of the radiators at the bottom getting more hot water than steam if the pipe sizes be reduced.

To make any of the systems we have described operate at a pressure under one pound requires that the pipes (both supply and return) be very large, consequently expensive.

In attempting to save parts of this expense pipe, sizes in most plants have been made so small that an average pressure of five pounds is needed to circulate, and generally as back pressure. An effort to remove this back pressure was made some twenty years or more ago by an inventor who attached a vacuum pump to the end of the return pipe, and by almost closing the return valves on the radiators, sought to permit enough vacuum effect to be produced on each radiator to remove all the water of condensation and air. Theoretically this was all right, and if all return valves were properly adjusted and none of them got clogged with dirt it worked well; circulation was good and back pressure was removed. However, in a large plant the return valves could not very well be all adjusted correctly, some being open too much and allowing steam to blow through and spoil the vacuum in the neighborhood of the lame valve and possibly all the way down to the pump, where an effort was made to preserve the vacuum by injecting large volumes of cold water. This in addition to the condensation was more than the boilers could take and much of it had to go to the sewer after being heated by the steam and the rest of the water. This made the system expensive to run in some cases, even if it did remove the back pressure.

Another inventor brought forward a system of air removal by vacuum, and by this time automatic (thermostatic) air vents had come into use and he put one on the air outlet of each radiator and connected all the discharges to the vacuum and let the condensation get away by gravity as before. If the return system was good the plant worked well; if not it did not. But back pressure was removed and the system was (so far as vacuum valves were concerned), automatic. It did not take much dirt to stop the action of some of the valves and put their radiators out of business. And if return piping was pitched in the wrong direction, or (in a one pipe job) the supply and return piping was too small, the trouble from these sources was aggravated. The owners of the vacuum return system soon made an arrangement whereby they could get thermostatic valves large enough to care for both air and return, and with one of these on each radiator their system became automatic (when properly cared for). Their thermostatic valves consisted of a rubber plug about four inches long, set in a screw by which it could be brought down on the valve seat or moved from it; when hot it was expected to expand toward the seat and close or nearly close the outlet. The expansion and contraction of the plug was so very slight in the range of temperatures to which it was exposed that if it ever got near the seat it never got very far from it, so it was very easily put out of business by dirt or poor adjustment. It is practically abandoned now.

Another inventor brought out a valve having a sealed cylindrical float with hemispherical ends, and having a valve at the bottom which was supposed to open when the water of condensation got deep enough to raise the float. He also had a separate air opening above the float and controlled by a thermostat.

This was claimed by the older concerns to be an infringement, and as the valves have been marked "Pat. applied for," the patent office apparently thought so too.

The sealed floats sometimes collapsed and the air openings got choked and the valves went out of business too frequently to be profitable, but they stirred up the older concerns who bought a patent on a so-called motor valve having a diaphragm operated by the vacuum and assisted by a float. The diaphragm was soon abandoned and a piston put in its place. The air was removed through a small opening closed by the rising of the float. These air holes would get stopped by dirt and the pistons got stuck and put the valves out of order. They are not now on the market, having been replaced by an open float which serves both as float and piston. The air is removed by a constant invariable opening, and the whole combination works well until the air opening gets closed or the piston-float gets bound by dirt.

Long before the above float system appeared, another float valve came on the market containing no thermostat or separate air opening; the float was open at the bottom and so did not collapse. The air was removed (after the water had been drawn off) through the same opening by which the water escaped, this opening being reduced to the proper size by the falling of the float. The continual changing of size kept the opening well washed and clear and the float being non-collapsible and not confined closely kept at work all the time, and as the air opening was very small when the float was down it did not blow through steam; and in some cases plants actually ran through the entire day without the use of any cold water at the pumps.

Other improvements will no doubt appear from time to time, but those we have mentioned are the principal ones just now.

In closing we may properly add a statement of the essential features of a perfect heating system; these are in the order of their importance:

First—The complete and positive removal of all water of condensation as fast as it is formed in piping or in radiators.

Second—The complete removal of all air or other gas mixed with the steam, as fast as it enters the radiators, and without impeding the removal of water or being impeded thereby.

Third—Absence of back pressure on the engines furnishing the exhaust. This feature becomes more important as the grade of engine becomes better.

Fourth—Absence of water and air and presence of a partial vacuum in radiators before turning on steam so that when steam is turned on it will quickly fill the whole radiator.

Fifth—Automatic action throughout with no adjustments to be remade every time a valve is opened.

To these might be added adaptability to systems of automatic temperature regulation.

* * *

On Shipboard

Little Boy—Wanna hear my doggie talk?

Little Girl—Dogs can't talk.

"Mine can. Now, listen. Rover, which part of this steamer do you like best?"

The Doggie—Bow!—Philadelphia Press.

* * *

A cold hand-out appeals to the hungry man more than a warm hand-shake.

* * *

About the first step toward reforming a man is to catch him in the act.

Ways of Food Crooks

Scarcely a day passed, a baker told me, that he was not approached by a food crook offering an undetectable substitute that would make his fortune. One Chicago firm besieged him with catalogues of their marvelous food preservatives for milk, butter, eggs, cheese and fruits. They declared that if used according to directions these discoveries would not violate any pure food law. The milk and butter preservative they stated had the same effect as ice, and only differed in the temperature it produced.

The meat preservative was a superior antiseptic discovered by an eminent German chemist and used throughout Germany not only by the first-class dealers but in the army and navy as well. This last was one too many, and he sent post haste for samples of these marvelous elixirs and turned them over to a municipal chemist. There followed illuminating discoveries. The milk medicine at one dollar a quart turned out to be 95 per cent water and 5 per cent formaldehyde gas, costing the producer about four cents. A pound of the German chemist's discovery which sold "at the cut-rate price of fifty cents" consisted of less than ten cents' worth of boric acid and salt. The Chicago firm received a letter which had the desired effect of striking his bakery from their mailing list.—Elizabeth Westwood in Good Housekeeping.

* * *

Value of San Francisco Junk

Southern Pacific and Santa Fe Railway freight officials state that between April 30, 1906, and January 15, 1907, junk, to the value of almost $3,000,000 was shipped from the burnt districts of San Francisco to various Eastern points. Most of the junk sent East consisted of steel, copper, brass, and lead. The railway people have particularly collected figures showing that over $5,000,000 worth of junk, in the way of copper, brass and lead have been already recovered from the ruins.

In the opinion of a great many engineers, the ruins will yield eventually molten metal of all kinds in excess of $26,000,000. They estimate the recovered and recoverable scrap steel and iron as being worth over $7,000,000, while steam, electric and other machinery taken from the ruins represent a high valuation.

The value of the millions of brick they estimate will be between $8,000,000 and $10,000,000. The engineers also figure that there were about two billion brick in the ruins, and that 25 per cent of them will be used again, and are worth from $3 to $4 a thousand.

* * *

Architect Must Be Cultured.

In addressing the architectural students at the Massachusetts Institute of Technology, when he visited Boston, Sir Aston Webb touched upon a point that is too often ignored, a matter that seems likely to be more than ever lost sight of by those guided by the Society of Beaux-Arts Architects into the belief that what is taught over the drawing-board is the all-important thing. Sir Aston said: "You will be very apt to think of nothing but architecture. An architect ought to be a cultured man. He has to move among cultured people, and if he is not as cultured as they are, he is put to a very serious disadvantage. He is not well provided unless he has read a great deal and has some other accomplishment.

Changes That Have Come to Plaster

THERE is hardly any part of house construction that has undergone more radical changes in the past few years than that of plaster. Just when it began, and how, is not so important, here as the fact that what is known as hard wall plaster has been steadily crowding the old-fashioned lime mortar into the background the past few years, and it promises to crowd it still further in the next few years. This hard wall plaster is calcined gypsum, the material that we used to call Plaster of Paris. It got its name in the early days from the fact that gypsum was first calcined and marketed in Paris. Among the initiated, however, this name is lost, so to speak, for while there is still plaster of Paris, Kansas, Ohio, Oklahoma, Michigan and a few other points are producing and calcining gypsum for the general trade here at a very satisfactory rate, and this calcined gypsum is being made into hard wall plaster of various kinds and it is increasing in certain localities. In fact, practically every city of prominence has its hard wall plaster factory these days and some of them have a number of such factories which produce this plaster, or rather make it up by various formulas so that all that is required to make it ready for the wall is the addition of water. There is some that is called pulp plaster, others called fiber plaster and wood wall plaster. Practically all of them use wood fiber in some form or other, from coarse excelsior to a very fine pulpy mass of disintegrated wood. It is not possible to give the exact formulas, for these are trade secrets, and any way, they are not essential to the retail dealer in this material. What he wants to know about it is, does it offer any advantages to him as compared to lime mortar for this same work? Whether it does or not depends somewhat on local conditions. How near one may be to the factory making this material, and how convenient on the other hand the supply of lime and sand is. It may be that in many cases it will figure out that there is an advantage to the house builder and to the lumberman in the use of hard wall plaster from a first cost standpoint, but this is not likely to be common at the present time, in fact, it is much more likely to be the other way. It will probably cost the house owner a little more to put on hard wall plaster and it may be possible that the retail dealer will have to put up with a smaller percentage of profits for the value of the material handled, yet these are not the only factors to consider. If the house owner gets a better house by this method, he ought to be pleased, and generally will, for there is no question but that we have come to the day when people give more attention to the subject of building well than they do to that of building as cheaply as they can. With this fact established the fact that hard wall plaster is an advantage to the builder, is not so much a question of whether the lumberman will sell lime or hard wall plaster, but to be the one to first lay it before his patrons so that he will get the not furnish it the chances are some one else will and he will lose his lime trade and gain nothing. It is therefore not only advisable, but practically imperative for the progressive retail lumberman to not only study the subject of hard wall plaster, but to be the one to first lay t before his patrons so that he will get the benefit of the trade. It might be said, too, that this same idea applies in all lines of builders' supplies, that is, if the lumberman is counting on furnishing these things he should keep right up with the times and keep the new ideas and new offerings properly before his trade, or else some one else will get them before the trade in a different manner and he will find himself losing out. But that is getting off the subject a little, for plaster is what is under consideration now.

To be prepared to talk plaster intelligently, and especially hard wall plaster, calls for personal study and investigation on the part of the retailer, but prominent dealers in this class of material have paved the way for this with circulars and literature explaining at some length what their product is, how it is used, and how it compares with lime plaster. Of course there is a chance now and then that the makers of the various kinds of hard wall plaster will paint the picture a little too rosy in their enthusiasm, but still they give one a very good insight into its possibilities, which can be followed up and toned down if necessary to fit the requirements of retailers' presentations to prospective builders. I have before me at this writing a sample of hard wall plaster literature which is put out by a Toledo company, that contains both information and suggestions. For example, after pointing out the disappointments that follow, when one builds a good house and after moving in finds the pleasure of occupancy spoiled by a poor job of plastering caused by the job being done by a cheap man they say:

"We make hard plaster, but don't you hire this 'cheap' man to put it on. We have made hard wall plaster for years and know that a cheap man can do poor work with our good material. He can't make 'pits' for that is impossible in hard mortar; he can't make 'map cracks,' for there is no shrinkage of material. He can 'skin the job' though, put on too thin a coat; he can neglect to provide a good clinch or key. He can retemper mortar after it has once set. All this will cause bad work. He can't make our mortar sift out. Our material requires water only."

In their specifications and instructions for use of hard wall plaster we are told that it is already mixed in the proper proportions and the only thing required is to add water.—St. Louis Lumberman.

* * *

Logic is Logic

The Irish intellect is more often associated with wit than with logic, but an Irish workman recently silenced for a moment the upbraiding tongue of his foreman by a display of something which bore just enough resemblance to logic to confuse his hearer.

The workman enjoyed leaning on his hod and making shrewd observations much more than he did stirring about, and the cry of "Mort! Mort!" fell on dull ears.

"Why don't you attend to your hod and keep that man going?" demanded the foreman severely when Patrick was enjoying one of his frequent periods of rest.

Patrick raised his hod with a leisurely movement and turned a pair of twinkling eyes on his accuser.

"Sure, now," he said, easily, "if I was to kape him goin' all the time sorra a thing he'd say at all, at all; an' if he didn't say anything I'd be thinking he wasn't there. An' if he wasn't there, sorr, what would he be wantin' of morthar anyway?"—Youth's Companion.

* * *

Bachelors

"Bachelors can be found roaming at large in all parts of the world. They inhabit apartments, clubs, open fields, bodies of water and music halls. They are also seen behind the scenes. They hover at times near front gates, and have been found in back parlors with the aid of a searchlight.

"Bachelors are nomadic by nature and variable in their tastes, never going with one girl long enough to be dangerous.

"Bachelors make love easily, but rarely keep it. Rich bachelors are hunted openly and shamelessly, and are always in great danger. Those who finally escape are, as a rule, useless ever afterwards."—Tom Masson.

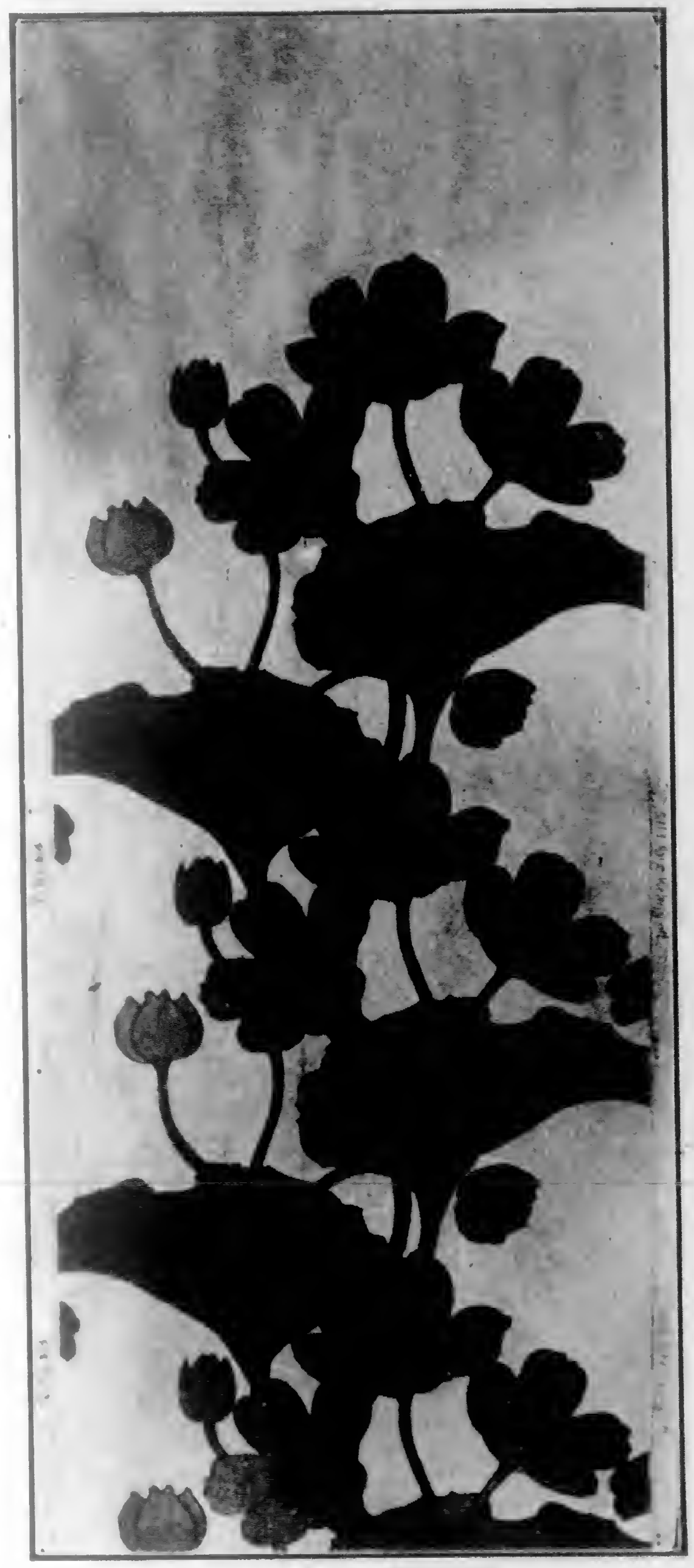
Interior Decoration

Wall Paper and its Possibilities for Good Decoration

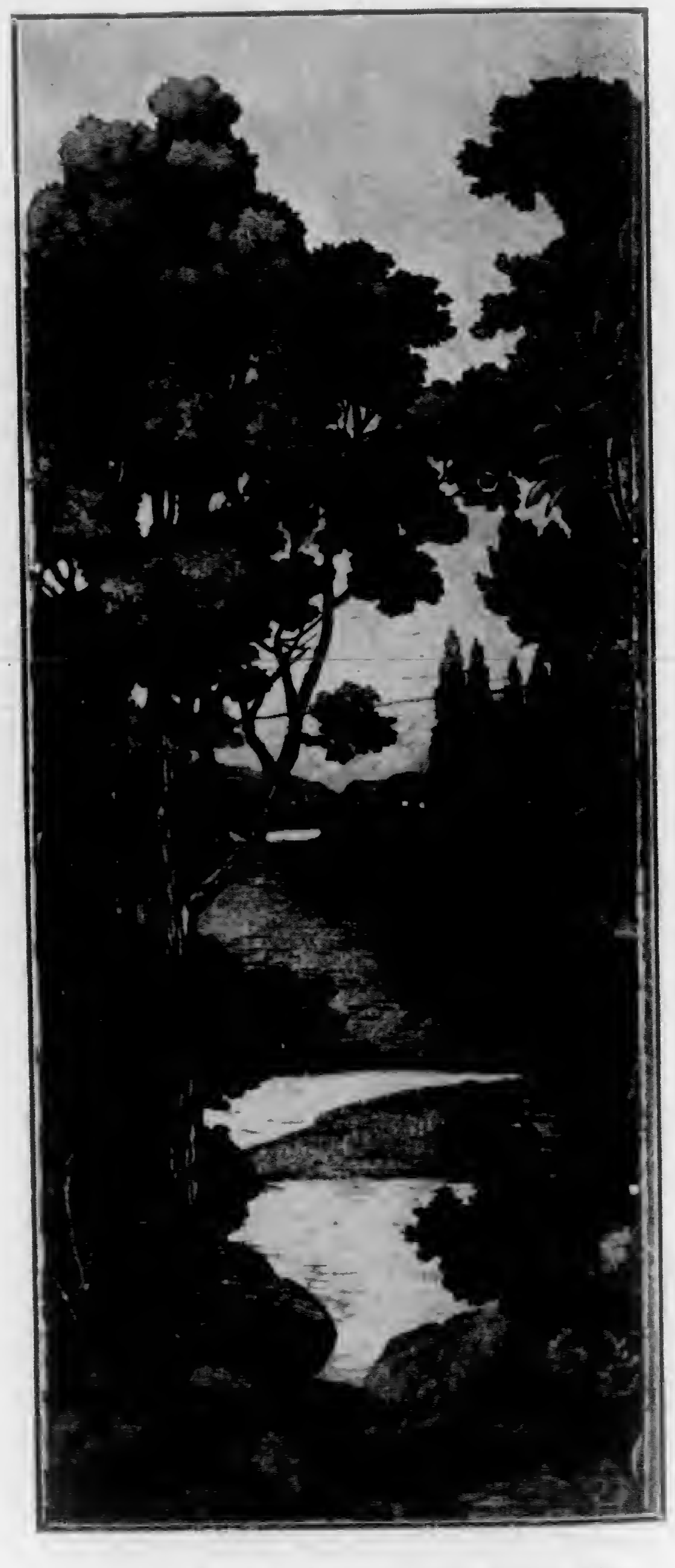
By C. WALTER TOZER

WITHIN the last several years wall paper has become a universal commodity and so inexpensive in the main that pretty nearly everybody can have walls papered with new and stylish paper, and nearly everybody does. Naturally, as a consequence, a great sameness in all work of this kind has resulted, and when, on the other hand, it is desired to have something different or out of the ordinary, it seems quite impossible to accomplish it by using wall paper in the ordinary way. The average dealer or decorator treats his papers purely from a merchandising point of view. His work is done without any special thought, with the result of sameness. It is very strange that they never think of suggesting something new in their treatment of their papers, and this all the more strange in view of the fact that many times the same pattern can be treated in a half dozen or more different ways. Because it is not done, is absolutely the fault of the decorator, as they have the very things right in their hands, with which they can make very unusual effects.

The crown border papers have a great decorative value, and they are not used as plentifully as they should be. By the use of these crown papers it is possible to paper a wall by first hanging the border, and then matching the wall paper up to it. In this way a completely finished design is produced at the top, which entirely eliminates the chopped off effect of the ordinary paper, when finished at the top by the picture moulding, or with the ordinary border. Then there are the papers with crown and base treatment. By means of the lower portion in conjunction with the crown border, the decorator is enabled to make a complete decoration without any unfinished look to it, top or bottom. The wall paper manufacturers are going to greater lengths each year to provide paper



A Floral Cut Out Effect



Tapestry Pattern Cut Out. Fine Effect Above Wainscoting

decorations which not only rival a lot of hand-work, or so-called fresco work, but in very many cases surpass it. Better it is, by far, to have a perfect design properly colored and printed than a bungling interpretation of a good style of ornament by an incompetent workman. Many of the self-styled fresco painters of today are absolutely unable to draw well, and their ability in color mixing is limited, indeed. A design which has been carefully planned and colored by an artist of ability, and reproduced by machinery is far better than most of the clumsy work which we see done.

There has recently been put upon the market another novelty which is easily traceable as an outgrowth of the crown idea. The new style of paper contains two or more lengths or patterns to a roll; in other words, there are two pieces of printed paper ten or twelve feet long to each piece. The top of each piece carries a completed design, while the bottom also has a perfect design or else has a plainer effect which dies off naturally into the base board. When these papers are hung, they have the effect of a beautiful hand-decorated wall.

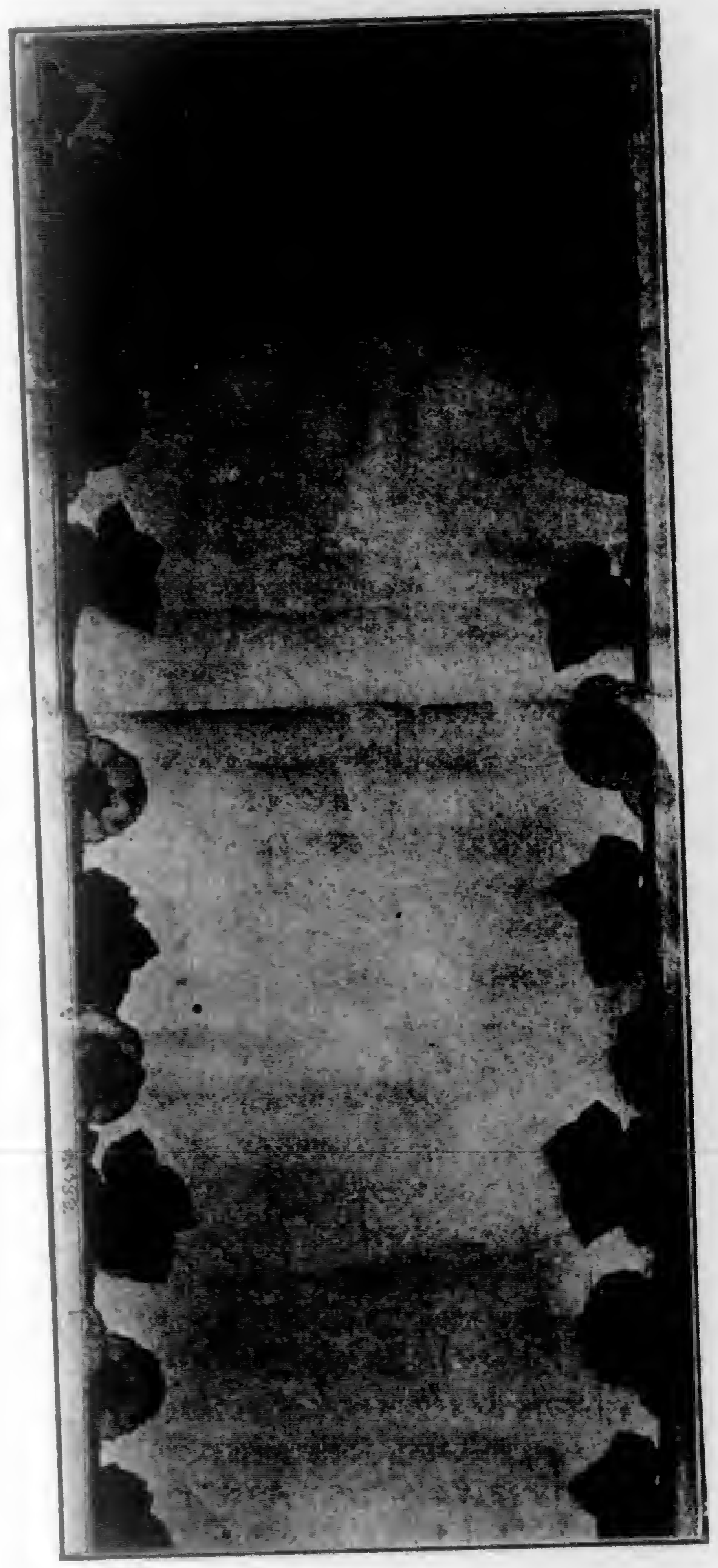
Another very attractive style of paper is found in the imported lines. The papers are termed scenic panels. The patterns are so large in length and breadth that it takes several rolls of paper matched up to make the complete pattern. Large wall spaces can thus be treated and show no repetition of the pattern in any way. The effect here is also that of a beautiful frescoed wall.

One American factory is now producing a paper which has wonderful possibilities. The goods are put up in double rolls, and each double roll contains two lengths of a completed pattern. They are printed on the same piece by a new patent process, and each length gives dado, side wall and frieze. The strips run twelve feet long and the pattern is so arranged that it can be made to fit a room of any height, without destroying the effect of the pattern. By their use the decorator can get a twelve-foot pattern without any repeat. A line of independent friezes is also made by this factory. One a fourteen-inch border containing over thirty colors and having a repeat every twenty feet. Another is thirty inches wide with over forty colors, repeating every eleven feet. One especially good frieze or border is thirty-eight inches wide and is made in burlap effects. It is a splendid frieze for halls, libraries and all sorts of Mission rooms.

In looking over the French lines we also find a wall paper novelty, which is thoroughly pleasing and highly decorative. These have been offered only during the last season. Can one imagine a more charming chamber effect than having a very simple pattern in the wall paper, a floral crown border in naturalistic colorings, and then a fabric for the draperies exactly matching the pattern and coloring of the border? We think not, as a room so treated is certainly about as charming as it can be made. The papers are not necessarily expensive and have the cretonnes, chintzes, and printed linens matching. Another splendid feature is that the fabrics are also run in borders for use as valances. Hence it will be seen that the possibilities of wall paper decoration are being carried very far.

Without the use of such treatments as we have just described, the decorator has possibilities of manipulating the ordinary paper to produce some very clever effects.

For instance, instead of using a crown border, a pattern may be cut out producing an effect equally as pleasing and very unusual. A plain color or striped paper can be used as the lower part of the wall and as a frieze some floral or conventional pattern can be so cut out as to produce a finished and artistic treatment. The cutting out of these patterns requires some time, naturally, but not as much as one would think, and surely the effect is worth the extra time thus spent.



A Fine Crown Border Effect

A Wall Pattern Cut Out to Form Frieze Effect

Then, again, unusually effective decorations can be obtained from the scenic patterns. Many of these run in beautiful tapestry colorings, having perhaps a roadway or stream of water depicted in the design, with trees surrounding. Such papers can be used so effectively above a wainscot of wood or burlap. In using this class of paper it should be planned to use only one or two repeats of the pattern, cutting out around the tops of the trees and then either blending or plainly tinting the space above to the ceiling line or moulding, as the case may be. The effect is splendid and very successful, doing away with the monotony of the constant repeat. Large, bold Morris designs or conventional patterns can be used just as effectively and may be used as solid wall and frieze, without wainscoting of any kind.

The pictorial friezes also afford unlimited opportunities for the wide-awake decorator to produce novel effects. He is not compelled to put a certain paper of a prescribed width in a certain place just because the manufacturer or designer says that that is the only place for it. They nearly all can be decreased or increased in width as well as in length. For decreasing their width we can again resort to the cut-out method, and for increasing their width we can carry up the sky line, or tops of trees by the use of fresco work. To decrease a pattern in length a very effective manner is to use panel treatment in conjunction. This can be done by taking the four central parts of a room and making four panels, we'll say one the mantel breast of about three feet and the same on the wall opposite, as well as one between the windows, with one on the end wall to be the same, but cut at a different part of the design, so as to get a different effect. These four panels, flanked on the sides with panels of plain colors, framed up with a small band or moulding, make an effective decoration. Thus it will be seen that it is entirely within the province of the decorator to vary the handling of his friezes.

* * *

How to Select Your Own Decorations

By F. A. TAYLOR.

A MISTAKE made by many home builders is that of leaving until the last thing the highly important task of providing for the interior decoration. It seems to me that one of the very first things to demand the attention of the prospective home builder is the question of how the house shall be decorated.

Don't be backward about consulting your architect and interior decorator in the early stages of your house planning. Don't try to select too many rooms at one time, as confusion is likely to follow, especially if one is not accustomed to assembling colors. Judgment should be used in the selection of decorations for rooms adjoining each other. A clash of colors is especially to be avoided. Regarding furniture, there is an unfortunate tendency to overcrowd a room. Many a beautiful house has been spoiled by an excessive display of furniture.

One receives his first impression of a house upon entering the reception hall and if this proves to be ugly, difficulty is likely to be experienced in overcoming a general prejudice of all the other rooms. To my mind no more attractive reception hall can be made than one set off with mahogany furniture in easy form with dull blue covering, blue drapes with a touch of old gold for trimmings, an easy seat near a nook in the staircase with a green sofa cushion lying loosely on the seat and an old-gold footrest cast to one side, and a blue, green and mahogany rug showing a neat hardwood floor. Such a scheme should readily impress anyone and should prove an easy color effect to get.

The living room should have a soft brown coloring with a shade of green or bronze green here and there to add life. Distinctive shades of old red and gold or copper make a beautiful dining room, while for the library Kentucky green on the walls, old ivory ceiling and wood work of bog oak make a pleasing combination, the latter room to be upholstered in tan leather.

Considerable care should be taken in the selection of fittings for the guest chamber. I would suggest a wall of ivory white with a soft, clear shade of yellow in some pleasing, graceful design, a touch of blue in the dresser cover as well as in the French pads on the chairs. Scrim bedspreads and curtains with an insertion of small yellow ribbon in a delicate Clunie lace, a blue carpet, willow beds and chairs complete the furnishings and should make a room in keeping with its name.

* * *

The Decorative Periods

By C. WALTER TOZER

ARTICLE III.

GRECIAN.

Graeco—Pelasgic, 1900 B. C.—1384 B. C.; Doric, 700 B. C.; Ionic, 600 B. C.; Corinthian, 290 B. C.; Hellenistic, 290 B. C.—168 B. C.
Etruscan, 1040 B. C.—238 B. C.

THE ancient Greeks received their first rudiments of art from the Egyptians. The old forms were changed and elaborated. The anthemion is one decorative device which is purely Greek. This, with the acanthus, can be traced through subsequent centuries in various forms, and we recognize it as one of the distinctive features of the Renaissance of three thousand years later.

The earliest and incipient period of Greek art is generally termed Graeco-Pelasgic.

The three purely Greek orders are the Doric, a development of the seventh century, B. C.; Ionic, a development of the sixth century, B. C.; Corinthian, a development of the third century, B. C.

Of all the ornamental styles which have been borrowed from plants the acanthus is the most popular. This was introduced by the Greeks, but it has been used repeatedly in innumerable other styles.

To the ornamental possibilities of its beautiful leaves is due its popular application. The acanthus was treated by the Greeks with sharp-edged, comparatively narrow leaves. The Roman style treated the tip of the leaves rounder and broader. The Byzantine and Romanesque styles again returned to stiffer, less delicate forms, and the Gothic gave the leaf large, round bulbous forms.

In the Grecian borders and Grecian friezes lay much of the dominant characteristic of Grecian decoration. Seldom were Grecian designs of an all-over character. The mural character was undertaken usually in borders or friezes. The present-day stencil form suggests the character of the work. Their lines were little shaded. The Grecians took squares and built within them. They never indulged in broad sweeps. In this way the Greek fret was a design of squares, a lasting feature modified and elaborated by innumerable touches.

The Greek school is purely classical. The term classical in a strict sense is applied to the best periods of ancient Greek art, and to the Roman arts, where the Roman work is the result of a direct following of Greek art.

The Etruscans, apparently, were a people of a northern race whose art closely resembled Greek. Living north of Rome, they were subdued and assimilated in 280 B. C., after a series of wars with the Romans, lasting through the fourth century, B. C.

The early Roman art was influenced by the Etruscan; later Roman art by the Greek. The Romans, being too busy building a world empire, did not develop an independent art. However, after they had assimilated the Greek cities of Italy and Sicily and of the Peloponnesus and the country to the north—in the third and second centuries, B. C.—the new conditions under which Greek artists worked and the immense size of the buildings that were demanded by the world-conquerors created a distinctive Roman—or Graeco-Roman—architecture and ornament. With the spread of Christianity it became transformed into Christian Roman (Mediaeval Roman or Byzantine) art, whose most famous periods are those of Constantine and Justinian.

The square fret is nearly always associated with Greek art, but the Chinese used it two thousand years before, and the Japanese and Moors also utilized it in a modified form. The Greek wave and Greek guilloche can also be traced back to the Egyptian and Assyrian, and the use of the Celtic fret is also interesting in its relations to the Greek form.

Another symbolism, much used by the Greeks, and which one finds in the Persian as well as the Christian art, is the Tree of Life. It is naturally shown in different forms, the terminals showing sometimes the acanthus details, and sometimes cones or lotus buds entwined in vines. Although closely associated with ecclesiastical decoration and representing the genealogy of Christ, the symbolism is traced back to Assyria and Egypt, 2000 years before Christ.

ROMAN-POMPEIIAN

Roman—753 B. C.—455 A. D.
Pompeiian—100 B. C.—79 A. D.

The Roman Empire was the fourth great empire of antiquity, and was founded 750 B. C.

The Romans were at first dependent upon the Greeks, for want of an artistic style of their own, but they exaggerated the decorative treatment instead of following the simplicity of that style.

The style of the Romans is full of dolphins and winged horses and volutes, extravagant but beautiful in decorative imagination.

Because of their love for pomp and splendor, the Romans naturally had a predilection for the Corinthian order, which they elaborated with fine artistic feeling. The different forms of leaves are idealized in a manner so that their natural origin is hardly to be recognized. Motifs that were much employed were the acanthus, oak leaves, laurel, pineapple, vine, palm, ivy, poppy and rich floral, fruits and figure work.

In treating of the Renaissance period it is well to bear in mind all these characteristics of Roman art.

Studying the fine orders recognized in classical architecture, one is impressed by the unusual beauties embodied in the Greek, Ionic, Doric Corinthian and the Roman Composite and Tuscan. This latter being a form very similar to the Greek Doric. A certain class of people dislike the classic style, feeling that it lacks the pleasure-giving qualities of what is termed popular design. As a matter of fact the term classic is an expression applied to the highest type of art, and whether it is of music, literature or decoration, a thing that is classic is the most lasting. The Greek and the Roman styles have lived for centuries.

The beautiful details of the Greek and Roman decoration have been a source of joy to all lovers of the beautiful.

The Ionic style was introduced 600 years B. C.; the Corinthian, 290

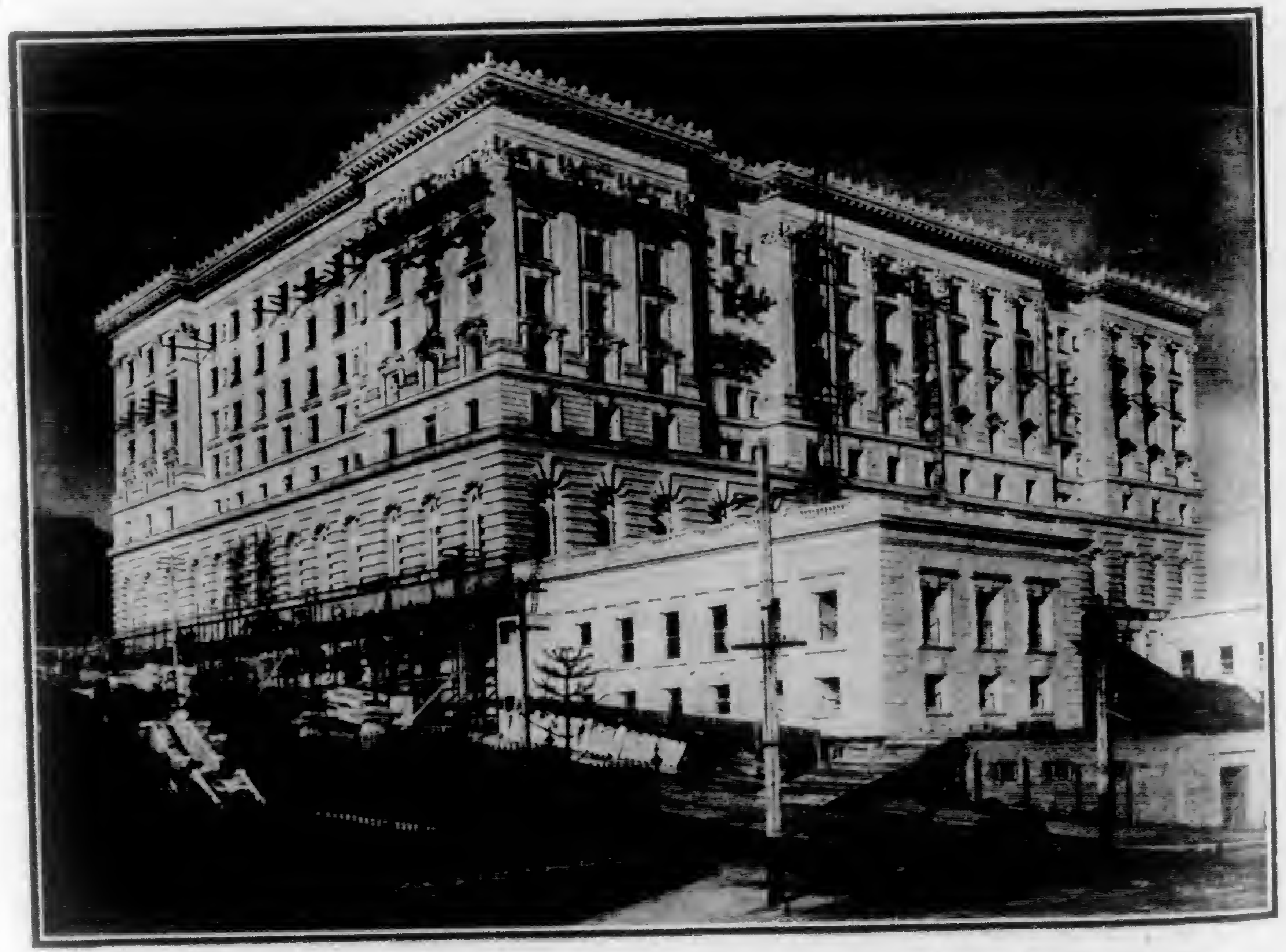
B. C.; and it is the Corinthian style which appealed to the splendor-loving people of the Roman Empire and developed the Composite, which combined the Greek Ionic and Corinthian.

The Pompeiian closely followed the Roman. The Romans undoubtedly did the most beautiful form of mosaic work. They not only produced geometrical mosaics, as we observe in so many floors excavated at Pompeii, but flowers, animals, still life, human and divine figures, even completed pictures. Their materials were stones of different colors, mainly marble, and their designs were exquisite. The excellent wall paintings found at Pompeii and Herculaneum give an idea of the lost Grecian paintings, for most of the Pompeiian as well as Roman works are reproductions of originals by Greek masters.

In the Pompeiian house, the apartments were all without windows. The walls were divided into a dado, a middle and upper section. The dado generally having a black ground with simple ornaments or linear decorations.

The purple, green, blue or violet ground of the middle space was enlivened with one or more figures or landscapes having ornamental borders.

The upper space most usually was white, enlivened with graceful scenes in various colors. Some of the apartments, however, had the walls beginning with yellow dadoes and terminating with black friezes. In addition to very rich arabesques, there were garlands, fruit, masks, candelabra, animals, which imitating nature with great fidelity, arrested the eyes of the beholder. The walls invariably terminated at the top in a small painted stucco concave, from which the ceiling rose.



Fairmont Hotel, San Francisco. Opened April 18, 1907. One Year after the Earthquake and Fire
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State Board Holds Biennial Election

The annual session of the northern and southern district branches of the State Board of Architecture was held in San Francisco April 10.

The board held its biennial election of officers and re-elected the retiring members as follows: Northern district—H. A. Schulze, president; Lionel Deane, secretary and treasurer, and Seth Babson, William Curlett and Clinton Day as additional officers. Southern district—John P. Krempel, president; Frederick L. Roehrig, secretary and treasurer, with Octavius Morgan, Sumner P. Hunt and William S. Hebbard additional officers.

At the termination of business an informal meeting was held , at which there was a discussion on architecture in general and the State law as applied to the profession.

The members of the southern district who attended were Octavius Morgan, John P. Krempel, Sumner P. Hunt of Los Angeles, W. S. Hibbard of San Diego and Frederick K. Roehrig of Pasadena. The northern district was represented by Henry A. Schulze, William Curlett, Lionel Deane, Clinton Day and Seth Babson.

The visitors were entertained by Clinton Day at luncheon at the Pacific Union Club, and were the guests of President Henry A. Schulze at a dinner at Tait's. Those present being former Governor George C. Pardee, Octavius Morgan, Seth Babson, Frederick L. Roehrig, William Curlett, Sumner P. Hunt, Lionel Deane, William S. Hebbard, John P. Krempel, Clinton Day, Walter Matthews, Louis C. Mulgharte, John Galen Howard, Albert Pissis, Sylvian Schnaittacher, William Mooser, D. Franklin Oliver, L. E. Stanhope, Merritt J. Reid, James W. Reid, T. J. Welsh, Bernard R. Maybeck, Albert Sutton, H. Garden Mitchell, W. D. Bliss, Charles L. Havens, Henry Geilfuss, Edmund Kollofrath, William Knowles, Henry H. Myers, Frederick D. Boese, Walter Brann, Herman Barth, B. P. Trowbridge, L. B. Dutton, Arthur Brown, Jr., Nathaniel Blaisdell, Charles W. Dickey, Matthew O'Brien, E. C. Bolles, E. J. Vogel, George P. McDougall, Lewis P. Hobart and Joseph E. Haskins.

Architects Wanted to Plan New City Hall

Designs for a new City Hall to cost $100,000 are to be advertised for by the Berkeley Town Trustees. The building will be erected on Grove street, between Allston way and Center street, and will be a two-story Class A structure. Competitive designs will be received until May 13th.

Head of Big Construction Company Here

A. M. Stewart of New York, the contractor who made a great reputation in England by constructing the $5,000,000 Midland Railway Hotel in Manchester and the $2,500,000 Savoy Hotel in London, each in fifteen months, when the Britishers estimated the work would take five years, is in San Francisco.

Mr. Stewart's company has signed the contract for the rebuilding of the Parrott building, which is to be done September 1, 1908. He has also secured the contract to build a ten-story structure for Mose Gunst at the southwest corner of Geary and Powell, to be done January 1st of next year, and an eight-story building for Gunst at the southwest corner of Mission and Third streets, to be done September 1st. He is reconstructing the Temple Emanu-El, to be done June 1st, and made all one story, the basement being eliminated. He is to erect an eight-story building for Thomas Williams on the southeast corner of Mission and Third streets, to be done October 1st; an eight-story building for Sanford Sachs on the north side of Geary street, between Grant avenue and Stockton street, to be done April 1, 1908, and he is to build the Orpheum, which will be ready a year from next Christmas. Gunst's building opposite the St. Francis and Sachs' building on Geary street may be raised to twelve stories each, now that the height limit has been removed by the Supervisors. All his contracts but the synagogue will be for Class A structures.

Fine Library for University

The Board of Regents of the University of California has voted to begin at once the erection of the new library building from plans by Architect John Galen Howard. They call for a fireproof structure of white granite, like that used in the California hall and the mining building, and the outline of the Hearst plans is followed.

The new structure will cost $575,000, which will be paid from the Charles Franklin Doe estate. The building will be located between California hall and North hall, and when, in the course of time, North hall is replaced by a new building of the same type as the others, the three structures will form a harmonious group.

New City of Leland

Much interest is being taken in the proposed new city of Leland, to be built by well-known capitalists near the Leland Stanford University. The project is being promoted by the Leland Improvement Company which has opened offices in the Grant building at Seventh and Market streets, San Francisco.

As a commencement $1,500,000 is planned to be expended for development the ensuing year. There are thirty-seven miles of streets laid out in the new city to be improved, the paving of which with asphalt and macadam will cost over $1,000,000 and nearly the same sum is to be applied for sidewalks, gutters, palms and other ornamental trees and shrubbery. A hotel is to be constructed of reinforced concrete and five stories in height, with a roof garden extending over the whole hotel area.

Architect for Grace Cathedral

George F. Bodley of London has been selected by the Grace Cathedral corporation as architect of the new cathedral and other buildings to be erected on the site donated for that purpose on Knob Hill, San Francisco, by the Crocker family. Lewis P. Hobart of San Francisco will be the architect's local assistant.

George F. Bodley has a world-wide reputation. Fellow craftsmen consider him England's greatest authority on Gothic architecture. Not long ago he was chosen architect for the cathedral in Washington, D. C.

Courthouse Plans Changed

The Sonoma County Board of Supervisors have adopted revised plans for the proposed County Courthouse at Santa Rosa, and bids will be received up to Saturday, May 11th. Bids were opened last week under plans by which the bidders declared the building could not be completed for less than $380,000, while only $280,000 bonds and $15,000 premium are available. All bids were rejected and the plans changed by Architect Dolliver of the Atlas Building, San Francisco.

The new plans call for reinforced concrete, faced with terra cotta or cement, while the former ones required Colusa sandstone. The finishing is now to be in metal instead of oak or Oregon pine.

New Architectural Firm

Edward J. Mayberry and Llewellyn A. Parker, architectural engineers, announce that they have established an office for the practice of structural steel and reinforced concrete engineering at 372-373 Pacific Electric building, Los Angeles. Both are graduates of the Massachusetts Institute of Technology.

To Repair Postoffice Building

Superintendent of Buildings Roberts of the San Francisco Postoffice, has been notified by the Supervising Architect in Washington, to prepare specifications and get bids for the repairs to the exterior of the San Francisco Postoffice, and all the repairs to the Mint and the Appraiser's warehouse. There is money on hand, appropriated by Congress, to do this work, which will be ordered as soon as satisfactory arrangements can be made to do it.

The Supervising Architect has held up the repairs to the interior of the Postoffice building until he could come here and make a personal inspection of the damage.

He says no steps have been taken yet to build a new Sub-Treasury building, and it is likely that the old one will be occupied until next summer. The Congressional delegation from California has been united in opposing the construction of a building on the two lots which can be bought for the $128,000 which Congress authorized to be expended for a site. That would leave $247,000 for the building, and it was intended to put up a four-story commercial structure with that sum, the Sub-Treasury being on the ground floor. But if Congress will give the money for a bigger site and a better building the Treasury Department will gladly make plans for a better structure.

Height Limit Removed

An ordinance removing the height restriction upon Class A buildings has been passed by the San Francisco Board of Supervisors.

The section of the building ordinance which has restricted Class A buildings to one and a half times the street width has been stricken out and replaced by the following:

"Section 41. Class A buildings shall be built with a steel frame supporting all wall and floor loads. The structural parts shall be built of incombustible materials. Class A buildings may be built anywhere in the city and county, and no restriction as to height shall apply to buildings of this class."

One or two verbal changes in succeeding sections of the ordinance were also made, merely to bring them into harmony with the above.

The height limits on Class B and Class C remain unchanged, and the whole ordinance in every particular remains as before, save for the striking out of the height limitation on Class A structures.

Architect for Oakland's Great Hotel

Henry J. Hardenbergh, architect of the Waldorf-Astoria and Manhattan hotels of New York and the New Willard of Washington, D. C., has been selected to design the $2,000,000 hostelry which will be erected at Thirteenth and Harrison streets, Oakland. Hardenbergh and his chief assistant are already on the coast. It being the former's intention to direct the work of construction personally. The preliminary draughting has been done by Architect Walter J. Mathews of Oakland. Mathews is supervising architect for the company. The hotel will be erected on the block bounded by Thirteenth, Fourteenth, Harrison and Alice streets. A syndicate of Oakland bankers and capitalists holds most of the stock, the demand for which caused the directors to increase the capital to $2,300,000.

Bids Wanted for School Houses

The Board of Education of San Jose, asks for bids to be in May 15 for the erection of the following buildings:

High school, F. S. Allen, architect, $175,000.

Grant school, Wolfe & McKenzie, architects; F. S. Allen, supervising architect, $50,000.

Lowell school, Binder & Schumacher, architects; F. S. Allen, supervising architect, $50,000.

Longfellow school, Mr. George W. Page, architect; F. S. Allen, supervising architect, $50,000.

Horace Mann school, Stone & Smith, architects; F. S. Allen, supervising architect, $50,000.

Addition to Washington school, F. S. Allen, architect, $15,000.

There will also be installed in all of these buildings up to date systems of heating and ventilating; program clocks, venetian blinds and laboratory furniture.

Bids Prove Too High

All bids for construction work on the new Polytechnic High School at Berkeley exceed the appropriation of $150,000 and the plans will either have to be redrawn or new bids asked for. Bids on the percentage basis may be requested if the Town Attorney advises that such a proceeding is legal. The Board of Education is now awaiting his opinion.

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THE FIRE INSURANCE HABIT

The press has done splendid work in combating patent medicines and other great abuses, but none of these, in my estimation, equal in sinister and far-reaching results the insurance habit into which our people have drifted or been beguiled, says Architect F. W. Fitzpatrick in a recent issue of Inland Architect. Though fire insurance was primarily established as a wise and beneficent safeguard against possible accident, it has grown to be a gamble of vast proportions and most insidious ramifications.

But a few years ago the companies figured up their ratio of losses versus premiums scientifically and all that sort of thing, but paid only scant attention as to how buildings were built and how cities were managed from the view point of fire-prevention; today their engineers are among the most skillful in the country and know what constitutes good construction. But the local agents of the different companies were only interested in premiums, not in good building, and they turned heaven and earth to get their companies to accept what everyone knew was a poor risk. What was the consequence? Poorly constructed and ill-protected structures have been insured at such rates that the propagation of their species appeared to be profitable.

This condition of affairs prevailed here in San Francisco before the fire. A ridiculously low rate was made on buildings here, practically a 90 per cent frame risk, because our city possessed an excellent fire department. Now that the city has been destroyed, the rates have gone up on everything new and old, in addition to a general increase almost everywhere else. Yet our people do not seem to understand that good, sound fireproof construction is the best insurance.

Are we taking steps to prevent such an occurrence in the future? Are we building our structures of steel frames, protected from rust with cement and from fire by hollow tile fireproofing? Are we cutting off story from story by enclosing elevator and stair wells, so that those conductors of fire may be closed off and are we taking the other precautions that would render the city immune to the blight that only a year ago almost totally destroyed it? No, except in comparatively few instances.

In San Francisco at this moment there is a demand for 2,000,000,000 feet of lumber, something like $40,000,000 worth. What for? For more shoddy though well-insured construction, more fuel for the fire that follows the next earthquake.

THE CITIES IN DANGEROUS CONDITION

Three years ago Architect Fitzpatrick, on behalf of the Associated Building Department of the principal cities of the world, made a most exhaustive inspection of our chief cities and then prophesied that the next great conflagration would be in New Orleans or San Francisco, both of those cities being the shabbiest built in the country and presenting the greatest vulnerability to fire. San Francisco has paid the penalty for her folly of poor construction. Lately Captain Sewell has made a similiar inspection of the cities on behalf of the United States Government and in his report says: "In New Orleans the conditions are so bad that it would seem that the city ought to have burned before this, yet, granting that a conflagration is once started, it is doubtful whether it would sweep the old and ill-conditioned buildings in New Orleans any more completely and rapidly than it would the sprinklered, mill-constructed risks in St. Louis and Chicago."

Apparently New Orleans is the poorest built city in the country, yet in all our cities there are vast numbers of wooden- joisted and mill-constructed buildings ever ready for complete combustion, abundant fuel for an appalling conflagration. It surely is time to absolutely bar everything but steel and hollow fire-proofing tile and brick and other at least incombustible materials, from new buildings and to compel the owners of old ones to make such alterations as will, at least, minimize the danger of fire.

The Architect and Engineer is making a fight for better inspection of steel and iron for Class A and other buildings. It is an open secret that some very bad material is being turned out on the coast and the people who are at fault must expect a grilling if conditions do not improve. We offer herewith a few hints on shop inspection which may serve some of our readers to good advantage:

SHOP INSPECTION OF IRON AND STEEL

The duty of the inspector at the shop is to watch the work as it proceeds through the various stages, to see that the material is not injured in any way and that the workmanship is good. He should have a copy of the specifications, a bill of the materials, and a complete set of the working drawings, and should examine closelv all finished parts, check the field connections, and have all errors corrected.

Any material which may have been bent in handling, should first be straightened before being laid out, and again after punching, if it has been buckled during the process. If this is not done, oftentimes in assembling different pieces, they cannot be made to fit properly, are difficult to draw together with bolts, and the spring in the iron is likely to loosen some of the rivets. In punching, the dies should be examined occasionally, to see that the edges are sharp and unbroken, and the diameter of the lower should not exceed that of the upper by more than 1-16 of an inch.

In assembling and fitting up. all

parts coming in contact should be well painted and care should be taken to get each piece in the proper place, to see that web-splices and all abutting sections close tightly, and that plenty of bolts are used to draw and hold the various parts in position. If the holes do not match exactly, they should be reamed, and not "drifted," as is often done, as this enlarges and injures the metal around the hole.

Where field riveting is to be done, the parts should be fitted together in the shop and reamed, or where this is impracticable, an iron templet should be made and the parts reamed to fit it. After the rivets have been driven, they should be tested, and if any are found to be defective, they should be taken out and replaced. Caulking or recupping loose rivets should not be allowed, as this only bends or wedges the rivet, and does not make it any better. In facing members, care should be taken to get the exact length and bevel desired, and the inspector should compare his steeltake occasionally with the "standard" at the shop, to see that they agree. As parts are finished, they should be carefully examined and measured, and if in accordance with the drawings and specifications should be marked with the stamp of approval.

E. O. RITTER.

Every Man to His Trade

"It's a wonder them street cleaners doesn't git run over."

"I'd hate to have their job. I'd be scared stiff all the time."—Life.

Book Reviews

"Modern Plumbing Illustrated"—A comprehensive and thoroughly practical work on the modern and most approved methods of plumbing construction. The standard work for plumbers, architects, builders, property owners and for boards of health and plumbing examiners. By R. M. Starbuck, Author of "Questions and Answers on the Practice and Theory of Sanitary Plumbing." "Questions and Answers on the Practice and Theory of Steam and Hot Water Heating," "Hot Water Circulation Illustrated," "Examination Charts for Boards of Health," "Examination Charts for Plumbers' Unions," "The Starbuck Plumber's Estimate Book," etc. Fully illustrated by fifty-five full-page plates, made expressly by the author for this work. New York: The Norman W. Henley Publishing Company. One large 8vo. volume; cloth; pp. 392. Price, $4.00.

This work is an eminently practical work, representing the best modern practice in plumbing and water supply. Naturally, the questions of drainage and sewerage occupy first place. On these questions the author has followed the requirements of the City of New York and other important cities, as well as the requirements of the United States, in all matters of drainage and sanitation.

A special feature of the work is the liberal scale drawings, which cover almost every imaginable condition likely to come before the plumber, architect or sanitary engineer.

"A History of the Earthquake and Fire in San Francisco"—a comprehensive account of the entire disaster; as accurate as science; as thrilling as romance. By Frank W. Aitken and Edward Hilton, San Francisco. The Edward Hilton Company, 876 Eddy street. Price, $1.50 the volume, 285 pages, 122 illustrations.

The story of the calamity is told interestingly, and with painstaking attention to detail. Scores of half-tone engravings of the stricken city before and after the earthquake, during the progress of the fire, and of the ruins, illustrate the handsome little volume.

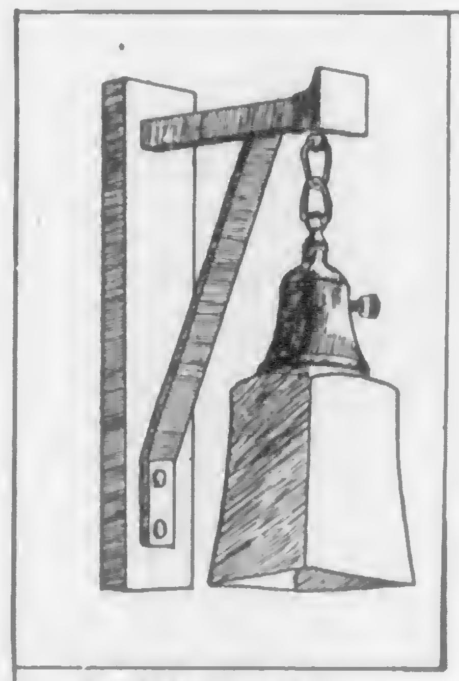
The Publisher's Corner

Decorative Work by the J. Llewellyn Company

April 18th was the date set for the reopening of the Fairmont Hotel—just one year after the fire which destroyed its former interior beauty. The outward appearance of the building has not been altered though the interior has seen many changes both architecturally and decorative. The plans for the interior changes in the rooms and corridors of the upper stories, were made by Architect Julia Morgan. The J. Llewellyn Company of San Francisco and Oakland had the contract for the decorating of the wings, basement, mezzanine floor and upper stories, while the principal rooms of the main floor were done by Baumgarten & Company of New York.

The color scheme of the work done by the J. Llewellyn Company on the lower floors is ivory white, while the woodwork in the upper stories is mahogany. Imported wall coverings were used in the suites and individual rooms, they having been purchased under the direction of Mr. Schastey, formerly of the firm of Baumgarten & Company but now managing head of the firm of Schastey & Vollmer of San Francisco.

The new Key Route Inn at Twenty-second street and Broadway, Oakland, to be opened in the near future, is a handsome three-story structure following the old English style of architecture. The interior decorating was done here also by the J. Llewellyn Company. This



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concern has lately closed some large contracts for decorative work, which speaks well for its ability. A radical departure in decorative schemes has been followed in the Key Route Inn, the upper stories being treated in "group" tinting. Pastel shades of brown, grey, blue, green, yellow and cream for the walls were used, while the woodwork has been done in ivory white, giving a decidedly light effect to all the rooms. The main floor is severely English to its smallest details, even to the shields on the elevator screening.

One departure, however, has been made on this floor, that being in the ladies' parlor. This has been done entirely in grey, walls and woodwork being the same shade. Oakland may well be proud of this handsome hostelry, the plans for which were prepared by Oliver & Foulkes while Vietch Brothers were the contractors and general superintendents of construction.

Schroth Building to Be Ten Stories

The Schroth estate has decided to go ahead with the erection of an office building facing Union Square. Before the fire it was planned to make this building eighteen stories high. The architects, Cunningham & Politeo, have redrawn the plans, which call for a ten-story Class A structure, which will cost as much under the changed conditions as eighteen stories would have cost before the earthquake. Bids for this building, which will have a handsome brick and terra cotta front, are now being taken.

Bids are being taken for the erection of the new Phelan building, at Market and O'Farrell streets. William Curlett is the architect. The entire exterior is to be of handsome terra cotta.

Coming Art Exhibition

The Los Angeles Architectural club and the Arts and Crafts society of Los Angeles propose giving a joint exhibition the week of May 20th.

This is the first annual exhibit of the club, and its members wish to make a strong appeal to architects and designers to aid them in making it a success by submitting some of their work.

The exhibit will include drawings in plan, elevation, section, perspective and detail, illustrative of structural, decorative and landscape architecture; photographs of executed or proposed work, sketches and paintings of decorative subjects. Contributions in any of these lines are cordially invited.

All accepted exhibits must remain until the close of the exhibition. Where possible, drawings must be either framed or mounted. Borders and mats should be reduced to a minimum. If practicable, the omission of glass is requested on all exhibits. Exhibits must bear the name of the designer.

The following committee will pass on drawings submitted:

Elmer Grey, Los Angeles.
Augustus B. Higginson, Santa Barbara.
Timothy Walsh, Los Angeles.
Chas. Sumner Green, Pasadena.
Irving J. Gill, San Diego.
Arthur Roland Kelly, Los Angeles.
Theo. A. Eisen, Los Angeles.
Frank Stiff, Los Angeles.
Francis Pieriepont Davis, Los Angeles.

All exhibits must be delivered prepaid by exhibitors on May 11th, at the Associated Arts Hall. 718 S. Spring street, Los Angeles. Those drawings accepted from out-of-town points will be returned prepaid by the club.

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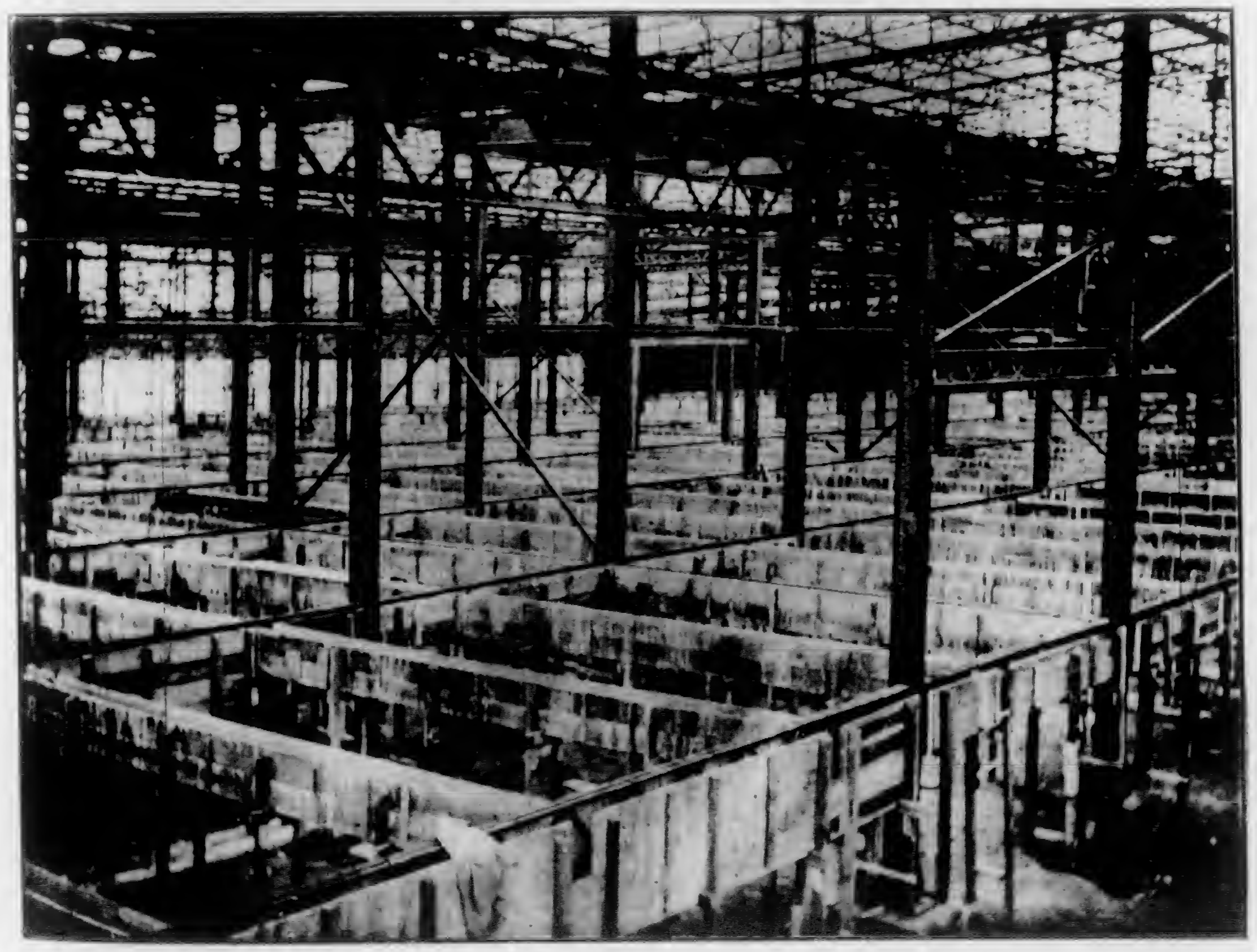
The Concrete Company

This month there is welcomed to the field of building activity a new constructor in the person of the concrete company under which firm name Mr. Wm. Ham. Hall and Mr. L. J. Mensch have made a combination as Constructing Engineers. These men claim to be expert specialists in the engineering and building uses of steel and concrete, and they are. They undertake to treat their building operations as engineering jobs and to personally supervise them as such. This is just what owners and architects are demanding in contractors before many more reinforced concrete buildings are offered for figuring. The reinforced concrete boom seems to be merging into a wail at inconsistent design, unfit construction and unfitting supervision.

Mr. Hall is a reinforced-concrete propagandist of long standing on this Coast; having while State Engineer, been a chief supporter of George W. Percy, Architect, in his advocacy of that construction and introduction of it, with Mr. E. L. Ransome of the twisted bar, over twenty years ago. A user of much concrete in engineering construction, Mr. Hall has persistently argued for the use of reinforced concrete on this Coast ever since. Five years abroad in professional work enabled him to bring back a great experience and fund of data from observation in concrete and reinforced concrete work. But not until after our great earthquake and fire was the soundness of Mr. Hall's advocacy acknowledged. When the last brick had fallen and the smoke had cleared away, there appeared a series of notable articles in one of our leading dailies pointing out the lessons of the earthquake and fire, and from these articles of Wm. Ham. Hall grew the confidence in reinforced concrete which later



UTAH COPPER COMPANIES WORKS, GARFIELD, UTAH.

This Cut Shows the Forms for a Supported Reinforced Concrete Floor, About 600 x 400 Feet in Extent, and Built to Sustain Heavy Shaking Stresses. L. J. Mensch (The Concrete Company) Designer and Builder.

resulted in passage of the new ordinance allowing its use in city building. The president of the Public Works Board has said, in an interview with some engineers and architects, that "if any one is responsible for the introduction of reinforced concrete here, it is the committee of architects and engineers, of which Hall was chairman, who advocated it before the Board of Supervisors." We are thus warranted in placing this meeting of the concrete company among those recognized as authority on this subject. Many engineering works, not only in our country but abroad. attest to Mr. Hall's success as a constructor; and the high esteem in which he is held personally and professionally, by many who should know, ought to impart confidence in the work of his new company.

Mr. Mensch is not known here, but in Chicago, Cincinnati, Toledo, St. Joseph, Salt Lake City and elsewhere he is known to many architects and engineers as a long-time practitioner in reinforced concrete design and a constructor of much experience in that work.

No less than thirty-four letters have been received in reply to disinterested and critical inquiries made as to Mr. Mensch; twenty-four of them from architects and engineers with whom or under whose engagement he has designed and constructed in reinforced concrete. Eight of the balance are from managers of great industrial works and establishments for whom he has built; one from a great contracting firm, and one from a Surety Company. They make a remarkable showing in Mr. Mensch's favor as a designer in reinforced concrete and as a contractor in that material. It is always difficult to get unqualified strong endorsement of an engineer or architect from his fellows. Mr. Mensch seems to have established a remarkably good standing with his fellow professionals. Such endorsements count for much in a specialty like reinforced concrete engineering and building.

Five office buildings, ten storehouses and warehouses, four large stables and barns, seven large factory buildings, five convent and other special buildings, three theaters, halls and music halls, four large tanks and swimming pools, a large number of notable foundations and foundation walls, and twenty-four unique stair-flights, a little flock of tall chimney stacks and an immense area of flooring and supported sidewalk work, all in reinforced concrete, stand to Mr. Mensch's credit, without an accident, today; and these do not include a vast amount of specially difficult industrial work construction, planned and executed by him in reinforced concrete, for the Kimberly-Clark, the Paper Trust, people, the Proctor-Gamble Ivory Soap people and the Utah Copper Company, of the Guggenheim control, for whom Mr. Mensch is just completing an immense reinforced concrete work in what is to be the largest Copper concentrating works in the world.

The concrete company ought to be able to establish very much confidence in its work, and not a few architects and engineers will look to it to uphold on this Coast a high standard in reinforced concrete construction.

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C. I. Chubbuck a Benedict

The many friends of C. I. Chubbuck, of the firm of Chubbuck & Harris, will be pleased to learn of his marriage on March 13th to Miss Anita Sullivan, of 119 Belvedere street, San Francisco. The ceremony was performed at the bride's home by the Rev. Jerome Hannigan. Miss Imelva White and George Wagner stood up with the happy couple. Mr. and Mrs. Chubbuck went as far East as Kansas City on their honeymoon.

Richter Manufacturing Company

Messrs. Haas & Leonardt, of the present firm of R. & D. M. Leonardt, are no longer the Pacific Coast agents for the Richter burlap, canvases, etc. The company is sending Mr. Freeman from the New Jersey office over this territory.

Trade Note

R. C. Smoot of San Mateo is doing all the plumbing, steam heating and sheet metal work for the new Peninsula Hotel at San Mateo.

In New Quarters

The Oakland Roofing and Paint Company is occupying its new building at 1788 and 1790 Telegraph avenue, near 34th street, Oakland. The officers are naturally elated at having a home, exclusively for the company's use. A successful business has made possible the new quarters, which are well appointed and sufficiently commodious to answer all needs of the company for some time to come. The company is prepared to give estimates on roof painting and repairing, and laying both pitch and gravel roofs.

Wright Hardware Company in Business Again

The Wright Hardware Company is again doing business within a stone's throw of the old location on Third street. Mr. Wright was fortunate in securing a desirable lease of a store at 77 Third street, which is almost opposite his former place of business. A complete line of Russell and Erwin hardware has been installed and Mr. Wright will be pleased to supply the trade with the same promptness and satisfaction that marked his business dealings before the fire.

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Stone for Los Angeles New Federal Building

The matter of the selection of building stone for the proposed court house and post office building to be erected by the government in Los Angeles, appears to have been definitely settled. State Mineralogist Aubury has received a letter from Senator Flint, in which he states that there is no likelihood of stone other than California stone being used in the building.

Mr. Aubury suggests to all producers of granite, sandstone, limestone, marble, terra cotta, brick, tiling, cement,

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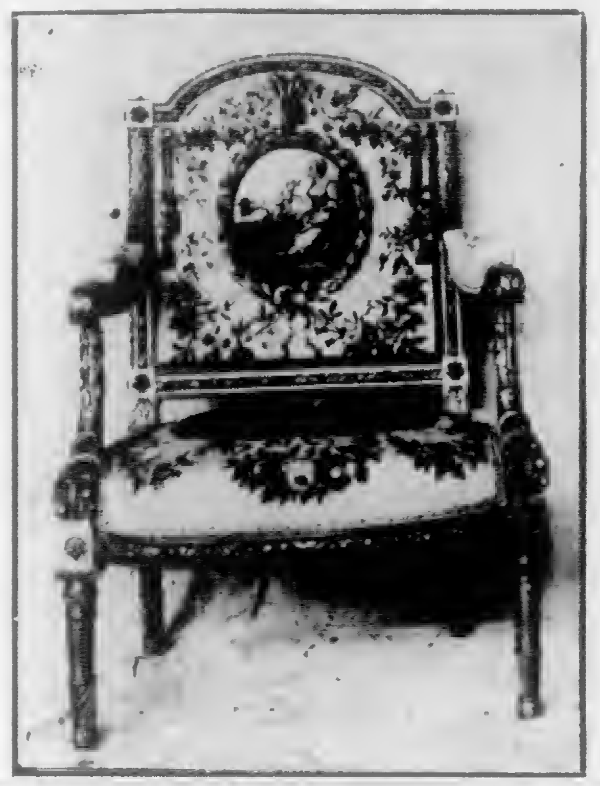

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W. P. Fuller Building in Oakland

Plans have been completed for a new building for the W. P. Fuller Company, the wholesale paint and oil concern, to be erected at Tenth and Alice streets, Oakland. The contracts have already been let, and the work will be commenced at once. The plans provide for a three-story brick building, 100 by 300 feet in size. It is expected that the structure will be ready for occupancy by the first of the year.

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Interior of Ralston Iron Works' New Plant

Ralston Iron Works' Big Plant

Few San Francisco concerns have shown greater enterprise or met with more notable success than has the Ralston Iron Works. Before the great fire a year ago the company occupied more or less cramped quarters on Howard street. With the passing of the conflagration little remained of the old shops outside of a few twisted girders and heaps of ruined machinery. One of the last jobs that the Ralston Company filled prior to the earthquake and fire was the steel frame for the California Casket Company's eight story building on Mission street, Albert Pissis, architect. No better example of the superior qualities of steel to resist earthquake and fire is to be found in all San Francisco than in this big building. The structure stands today as, indeed, it stood the day following the fire, a monument and a testament to steel frame and honest brick and stone construction.

Within four months after being burned out the Ralston Company was busy turning out material for the reconstructed city in its new shops at Twentieth and Indiana streets. With four times the room available in the old shops the company was in a position to contract for much big work and as a result some of the largest buildings now in course of erection in San Francisco have, or will have, Ralston iron and steel in them. The company was reorganized after the fire with H. J. Ralston president and Erskin Richardson secretary. The name Ralston was, of course, retained. H. J. Ralston's father having founded the company more than 30 years ago. The son has been identified with the company for 19 years. He is known among the architects and builders as a hustler and his thorough knowledge of the business enables him to meet his competitors with more than the average degree of success.

The new shops are 70 by 750 feet and the crane used spans the entire width of shop. Among the big contracts which the company has on hand at the present time are: Steel work for the eight-story building for Thomas Williams, and which is now being erected at the corner of Third and Mission streets from plans by Architect Clinton Day; six story building at Second and Mission streets; the Aronson building; the Building Trades Temple; Rudolph Spreckels' building and a number of other smaller structures.

Three-Story Frame Building

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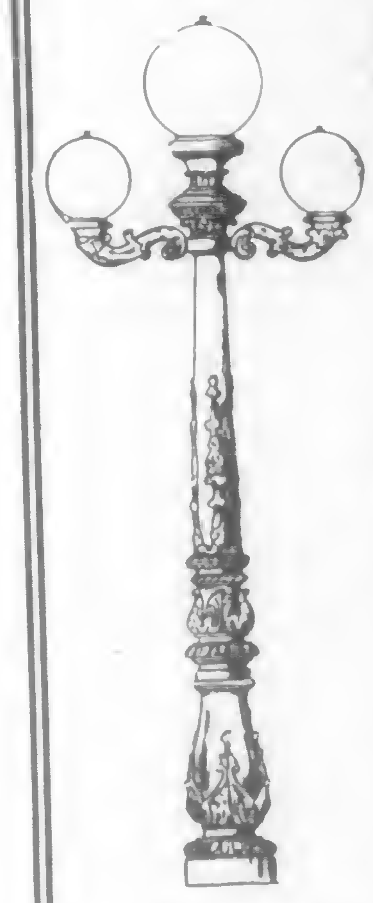

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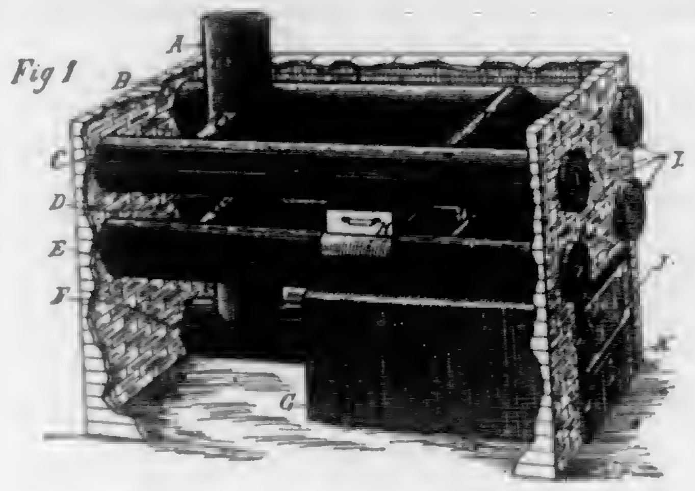

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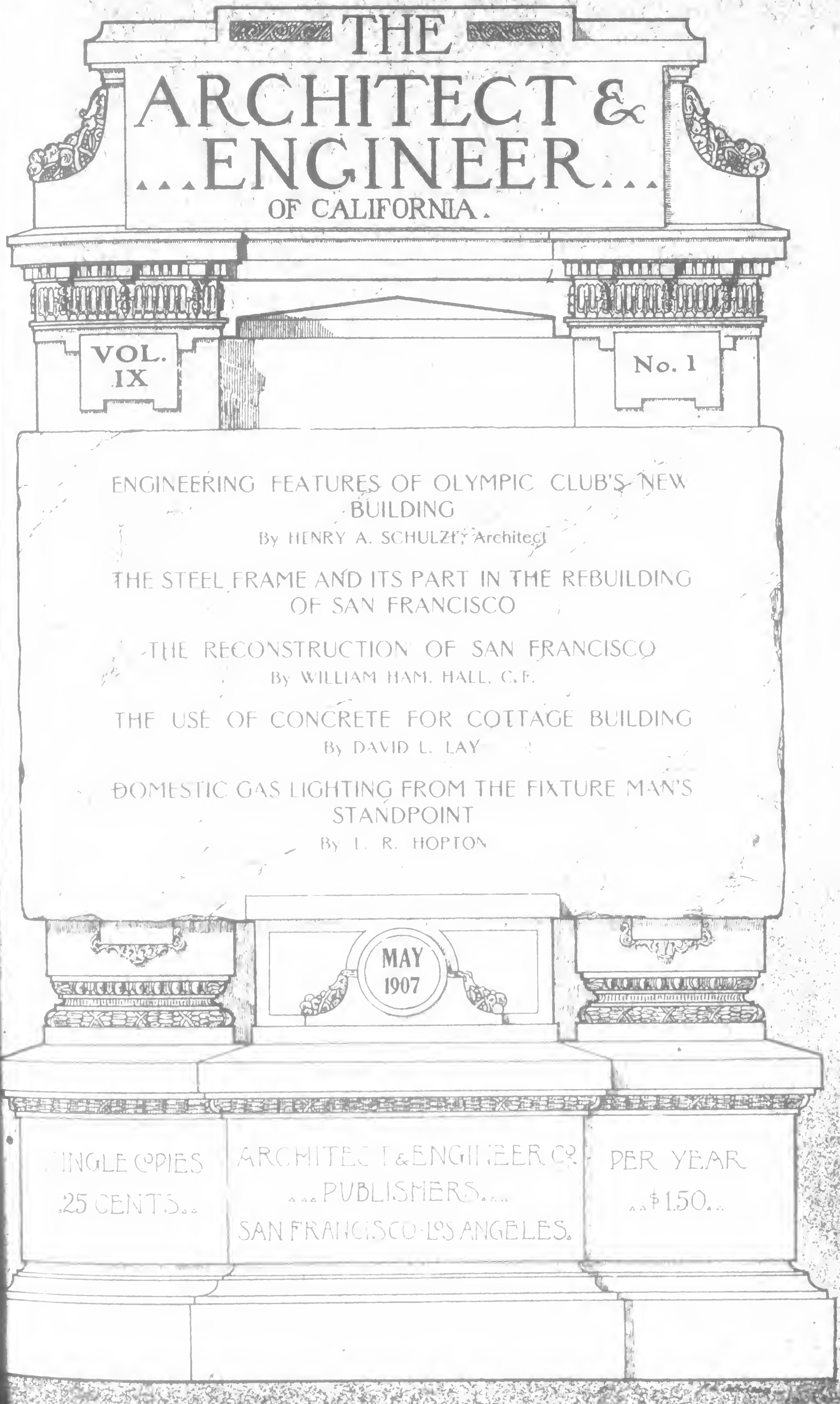

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VOL. IX

No. 1

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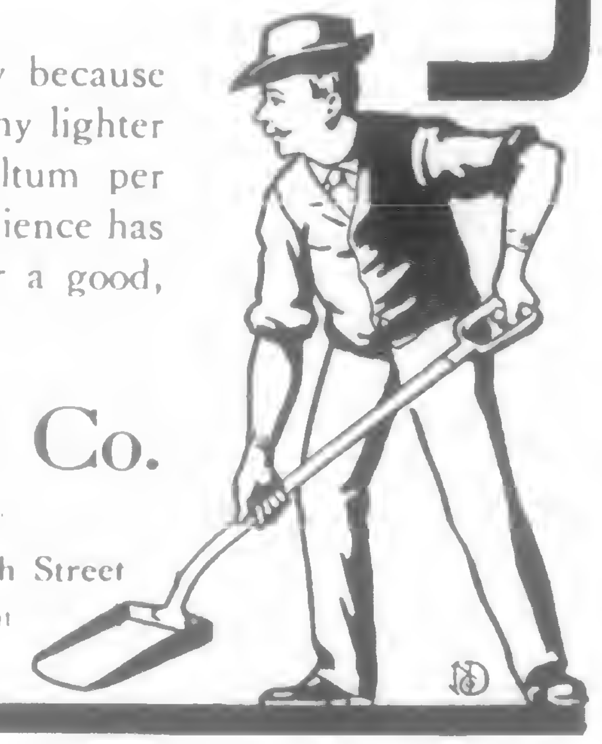

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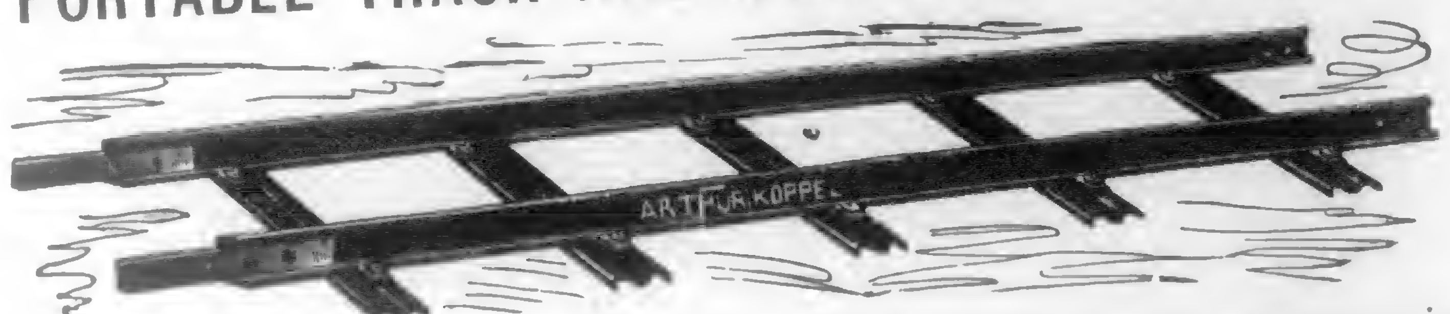

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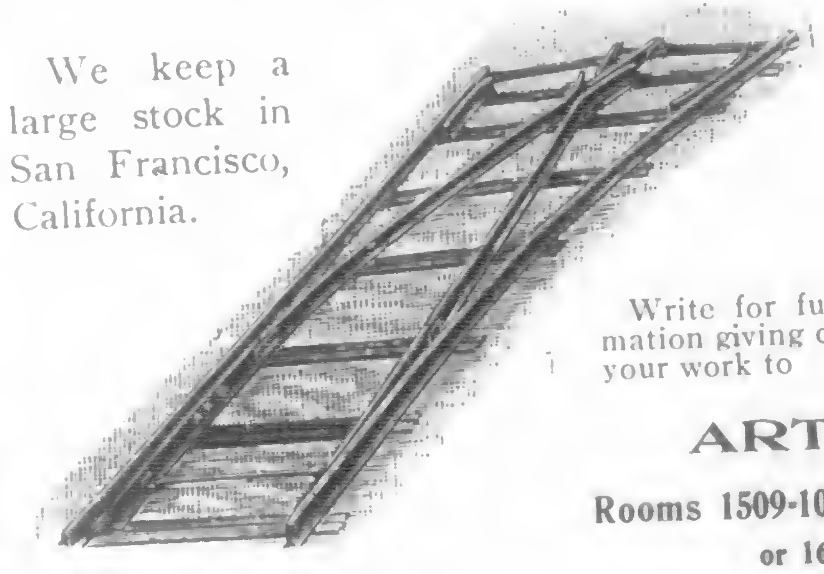

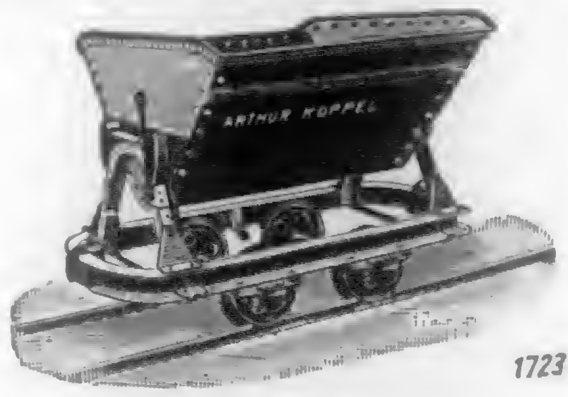

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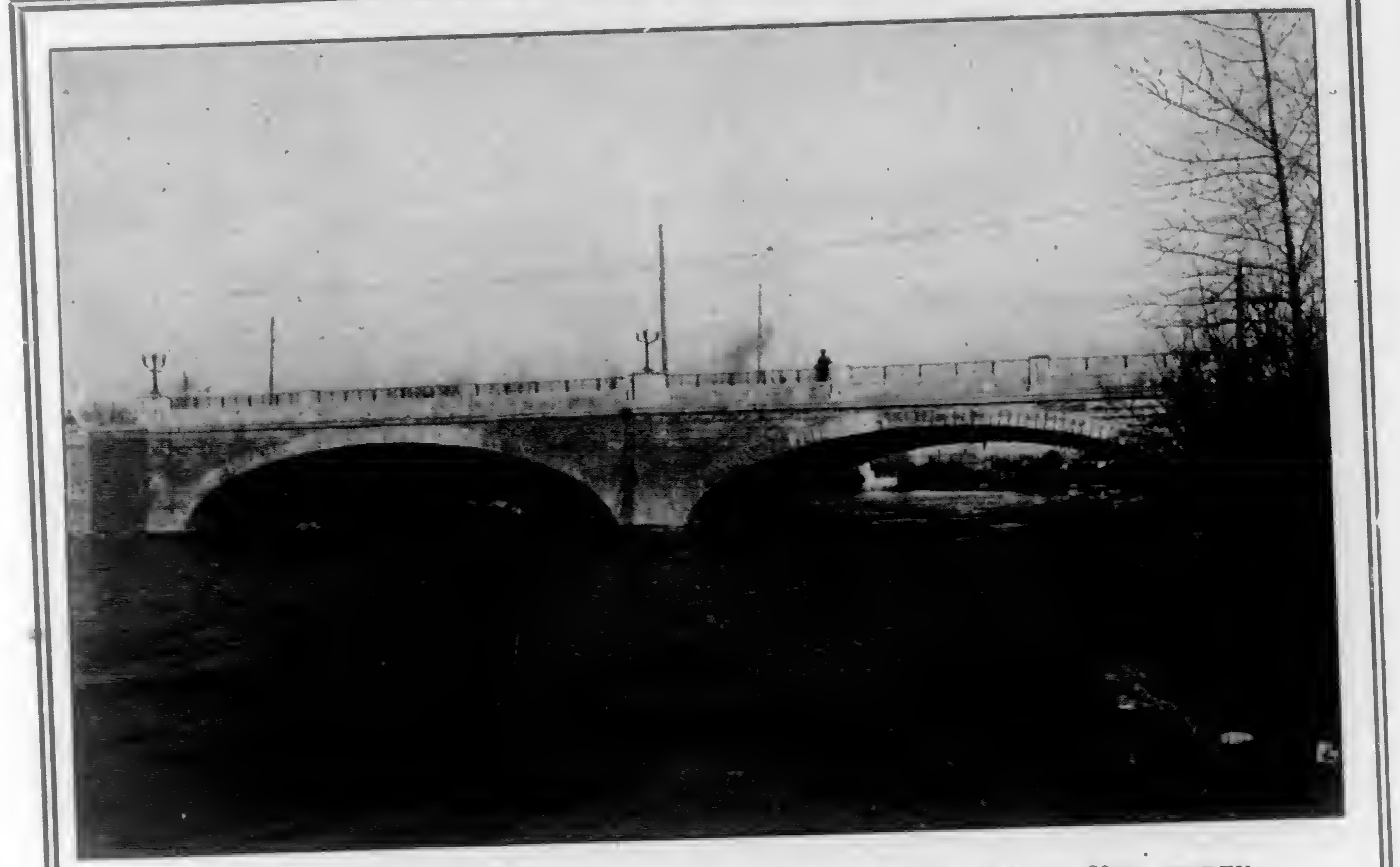

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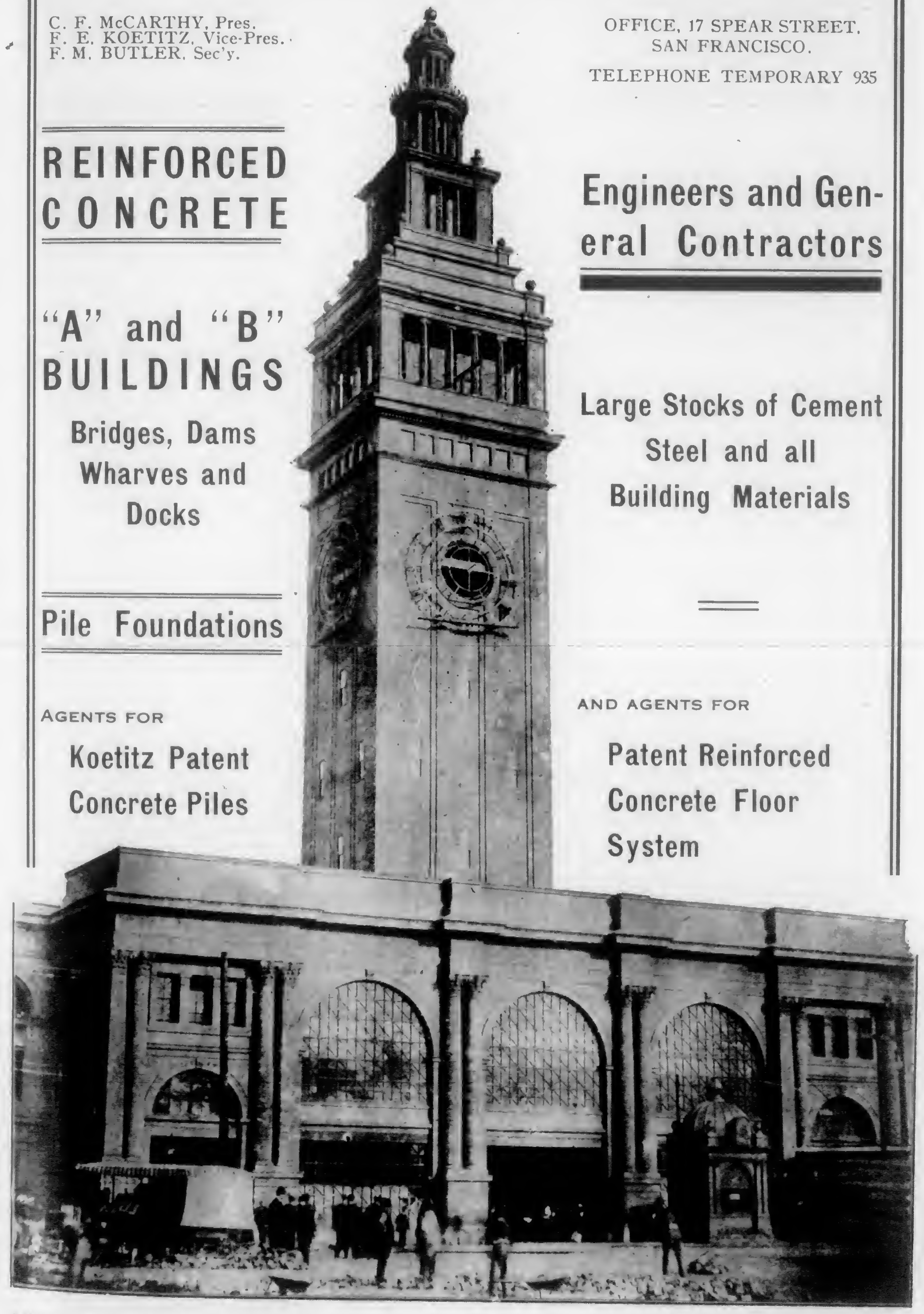

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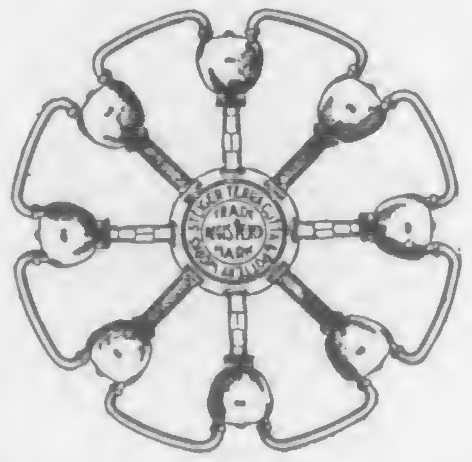

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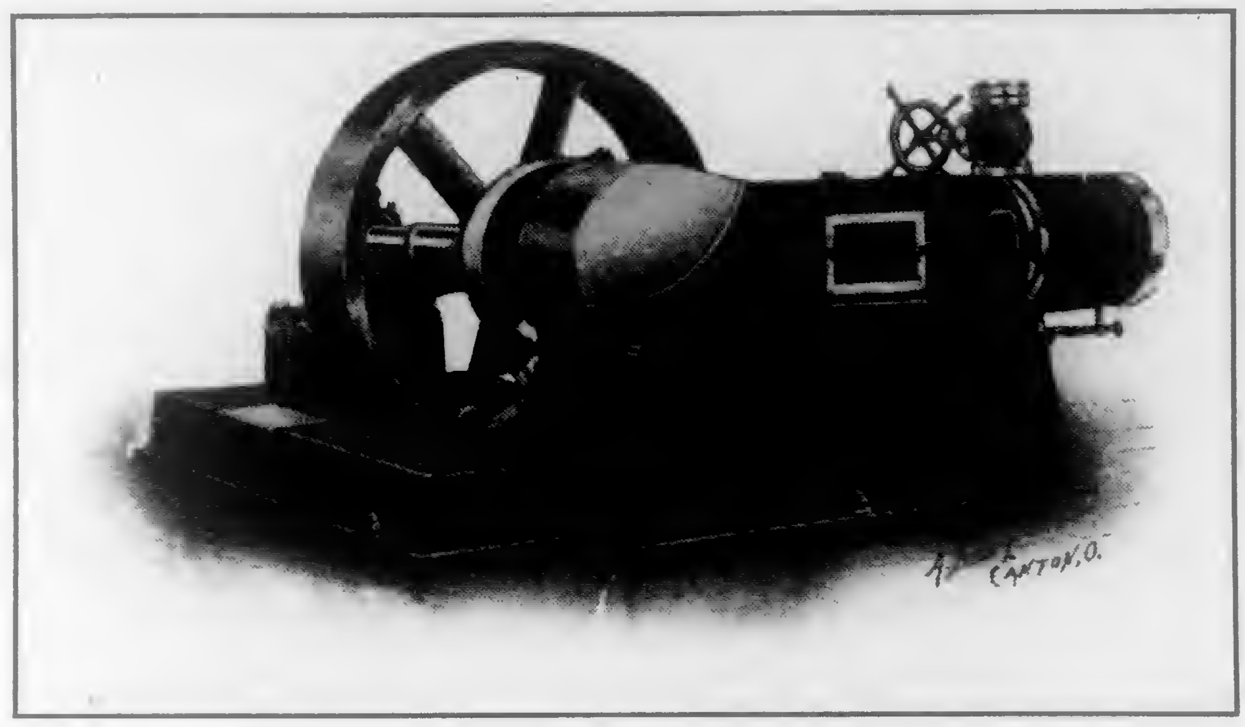

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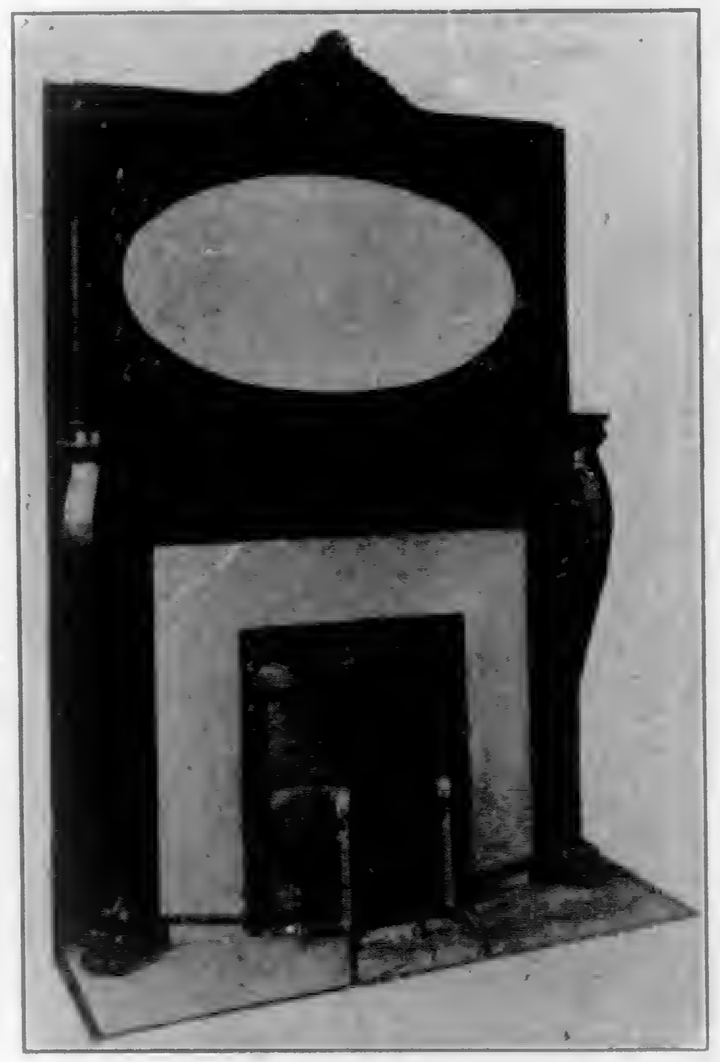

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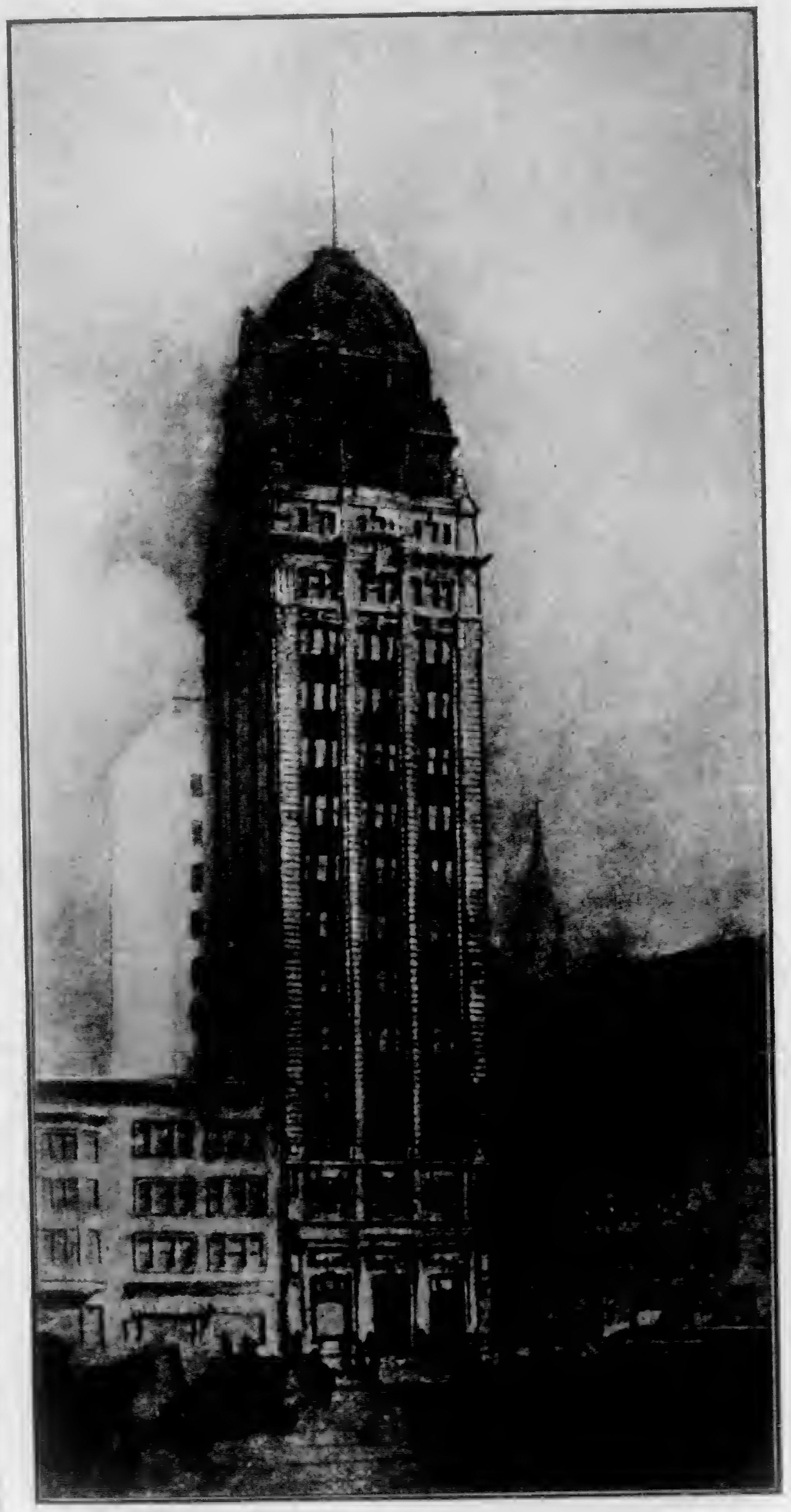

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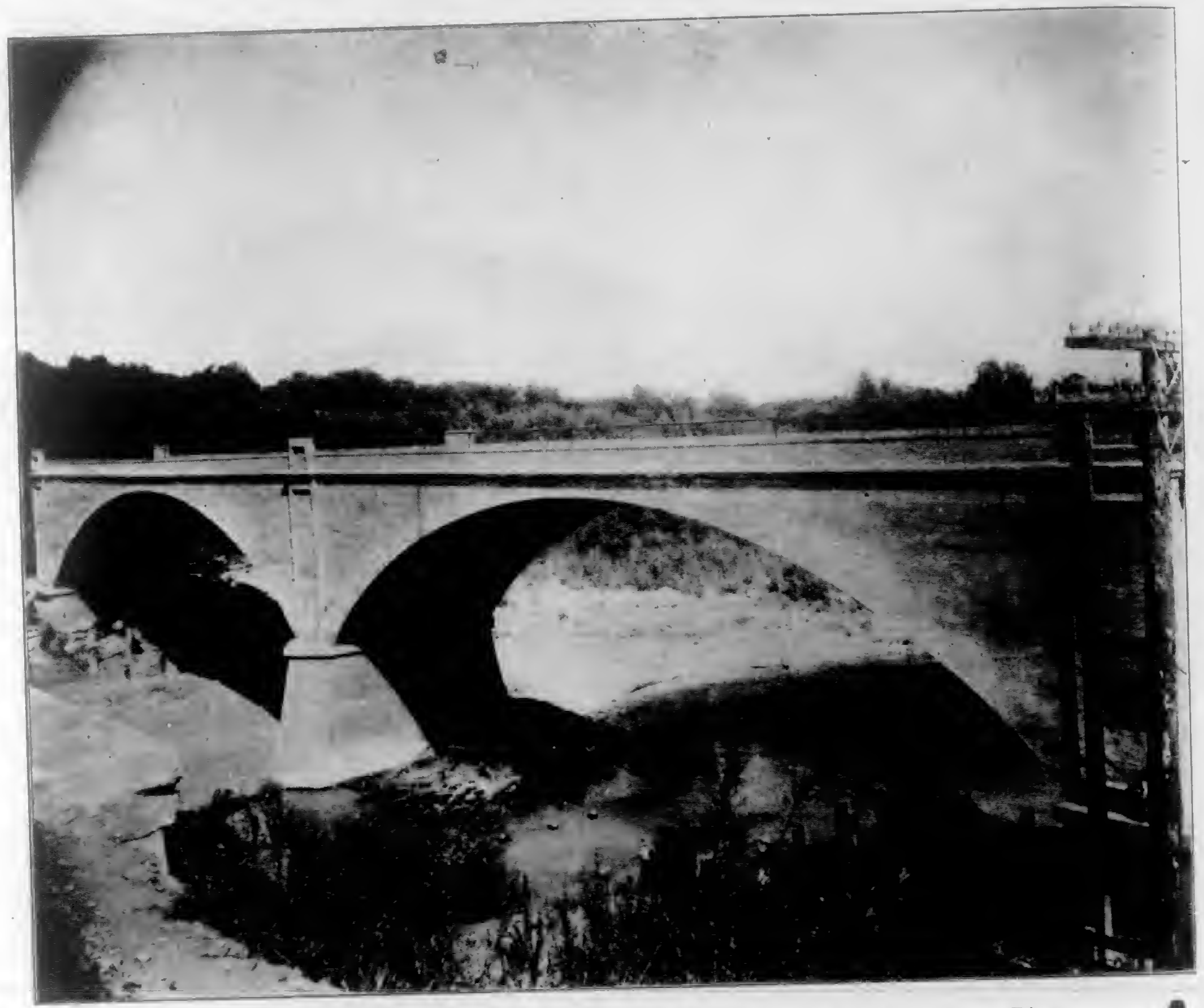

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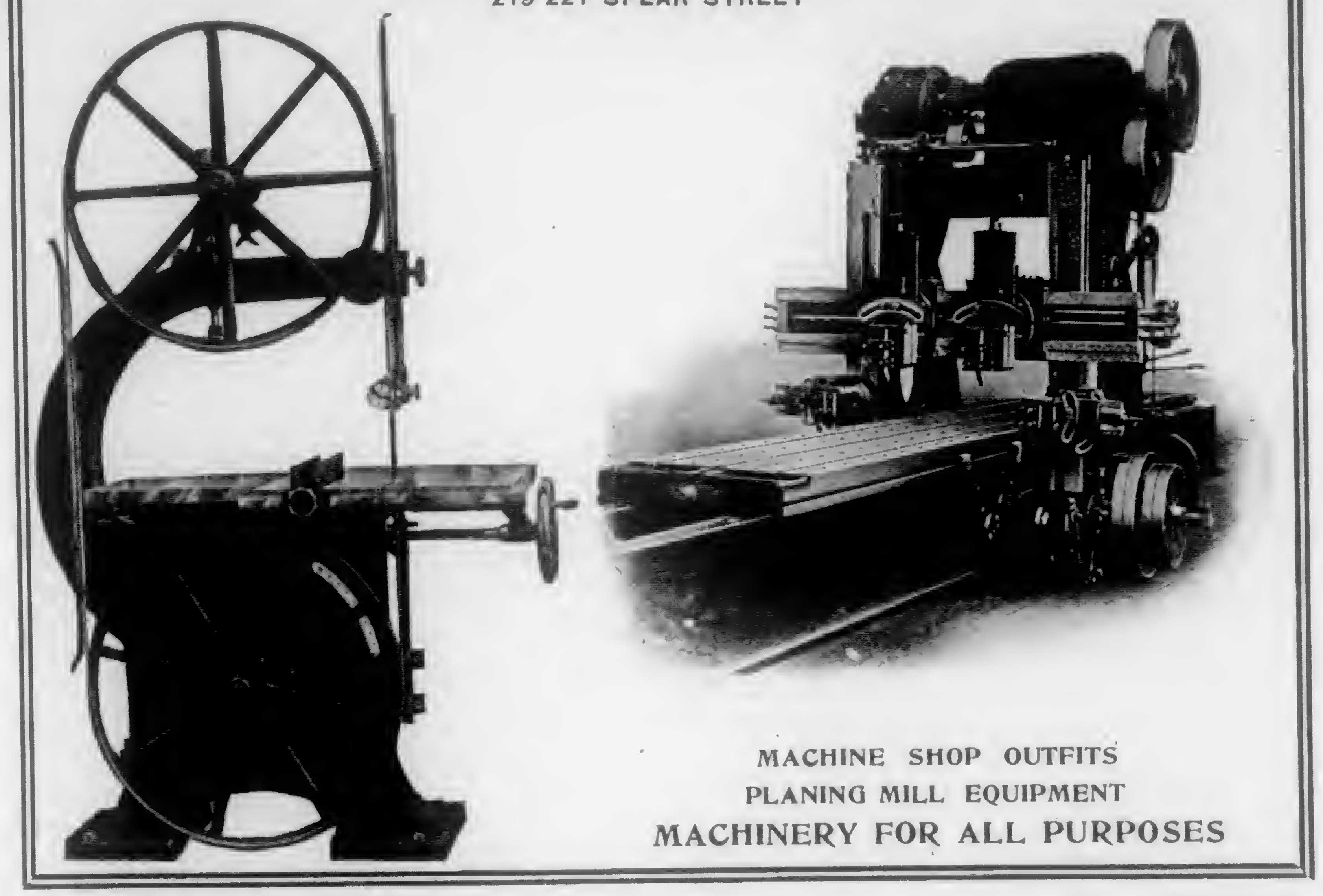

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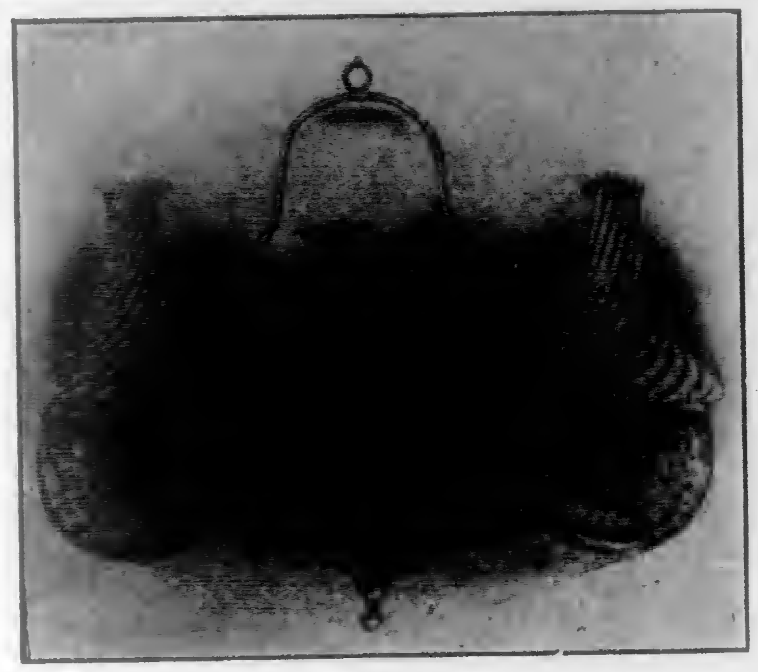

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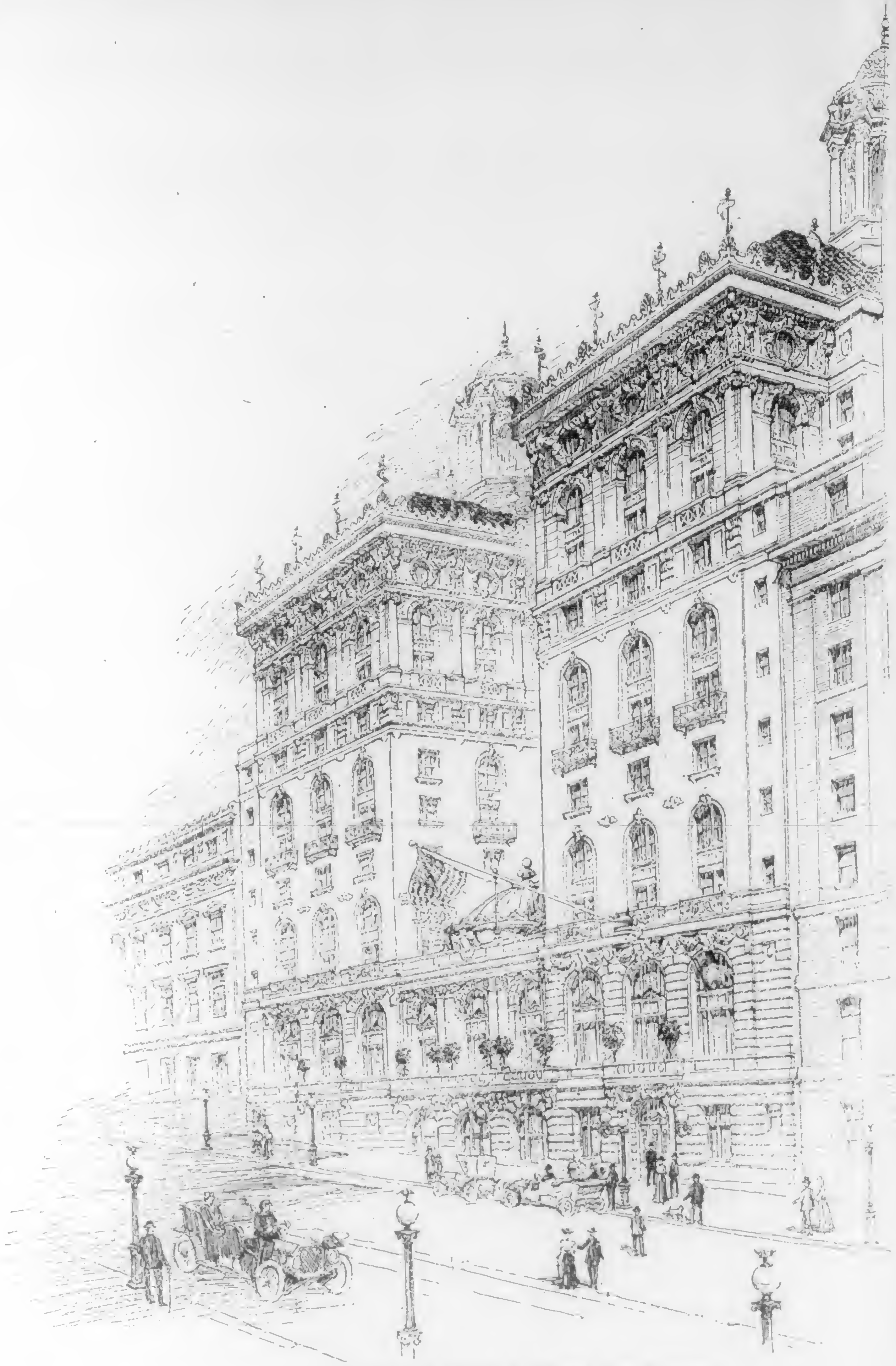


The New Olympic Club Building, San Francisco
Henry A. Schulze, Architect

Frontispiece, The Architect and Engineer
of California, May, 1907.

THE
Architect and Engineer
Of California

VOL. IX. MAY, 1907. No. 1.

Some Interesting Features of the New Olympic Club Building

By HENRY A. SCHULZE, Architect

FROM an engineering view point the classic new home of the Olympic Club of San Francisco, presents some interesting features. The new building is being built on the old site on the northerly line of Post street between Mason and Taylor streets. The former building had a frontage on Post street of 137½ feet; the new building is to have a frontage on that street of 170 feet and a depth of 137½ feet, the entire lot being covered by the new building. The structure will ultimately be twelve stories high above the sidewalk but at the present only six stories above the sidewalk are contemplated.

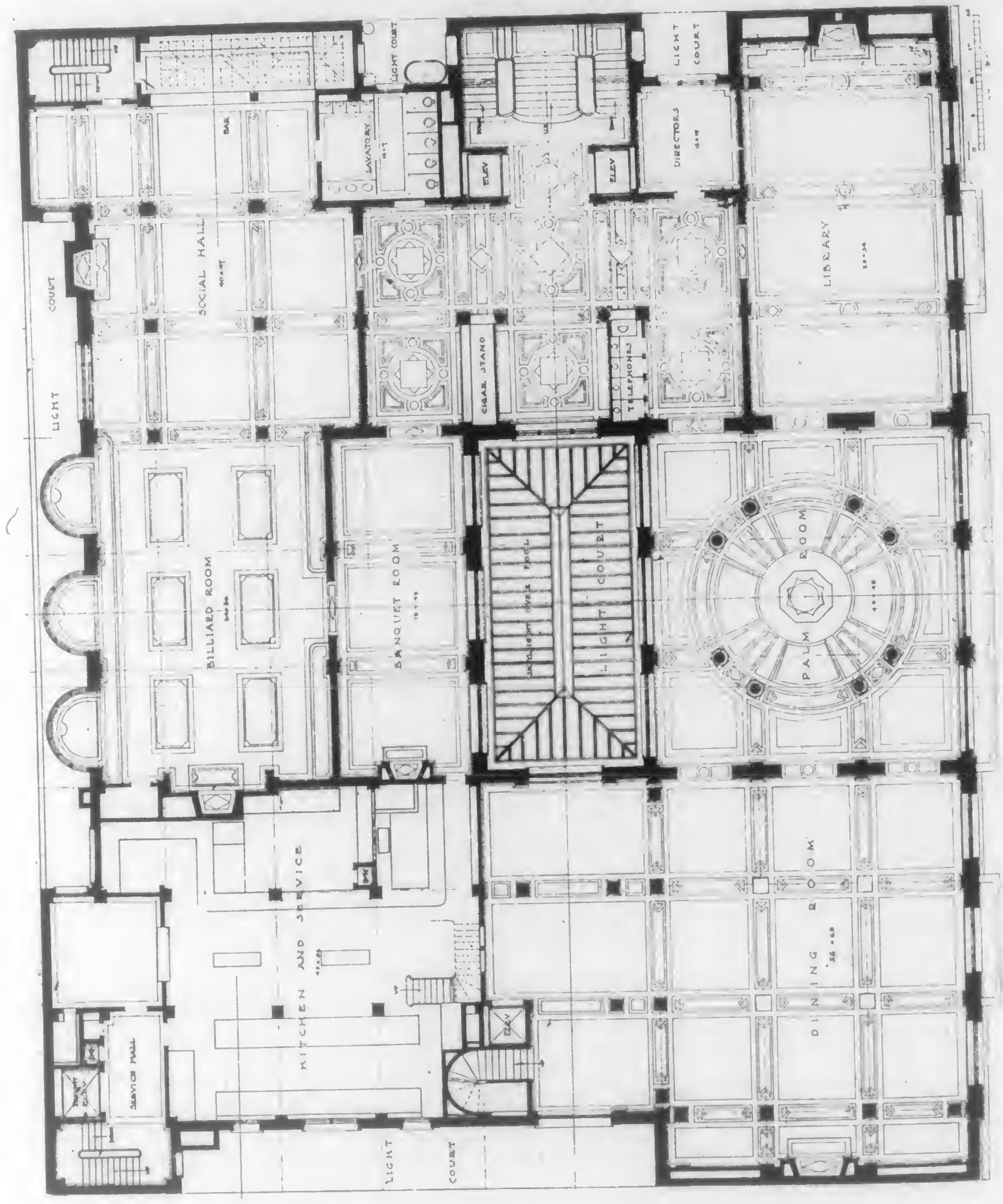
Since the first day of January the excavations and foundations for the twelve-story building have been under way. As there are practically three full stories under the sidewalk level reaching a depth at one point of fifty-two feet an excavated pit has resulted—the deepest of any heretofore undertaken in San Francisco and not many to equal it in any other portion of the United States.

The building is to be of the Class A type of steel frame throughout with reinforced concrete floors and walls of the most approved type of construction embodying the latest structural methods, the combination of which will make this building one of the strongest and safest in the city and capable of resisting the severest stresses that can be imposed upon it.

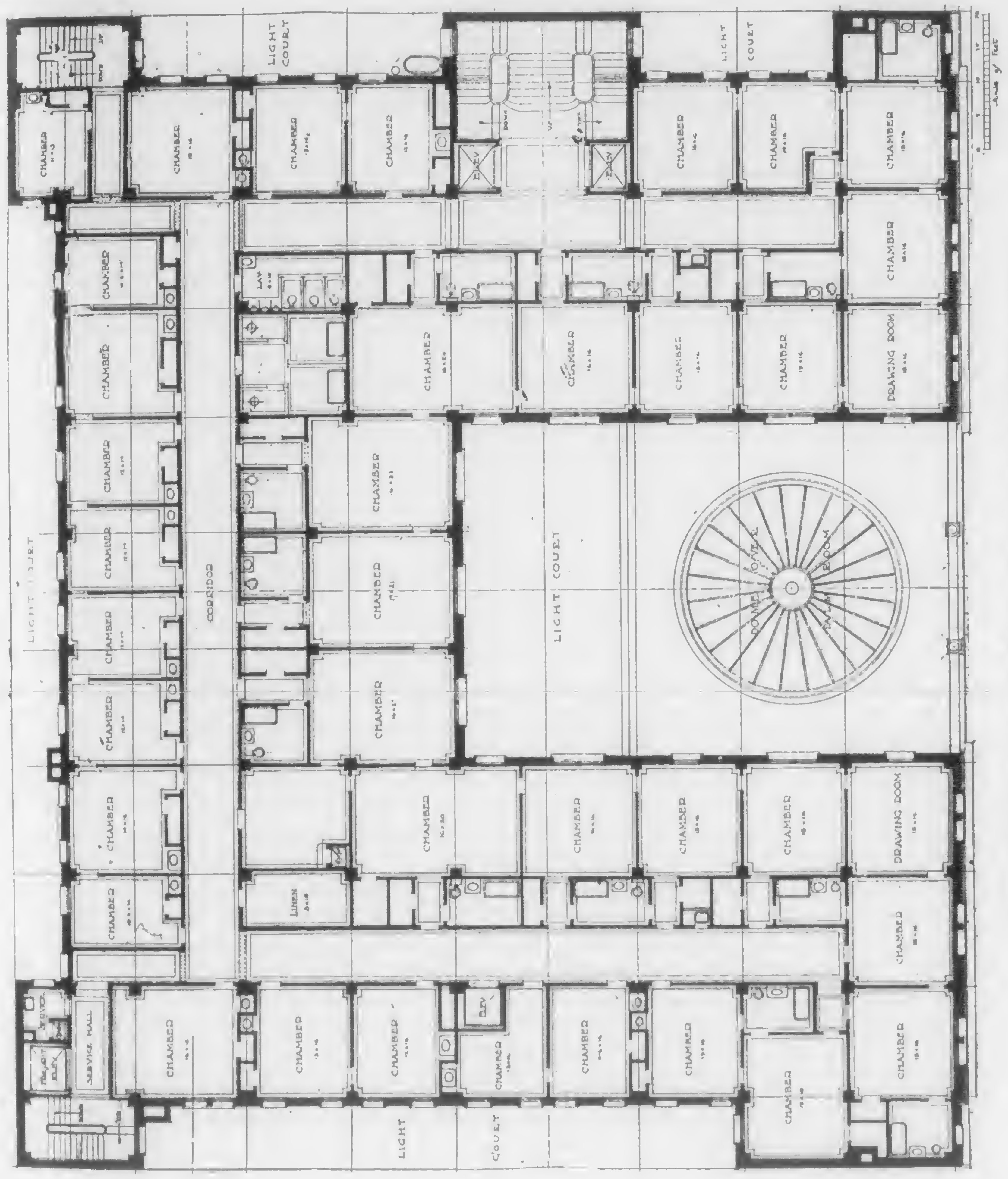
The exterior will be of the Italian Renaissance style of architecture with a recessed court 48 feet by 96 feet in size, projecting or intruding in from the street above the second story. As the exposure is to the south, light, air and sunshine are ensured to all parts of the building, even to the swimming pool located in the basement at its lowest level.

The first story will be faced with heavily rusticated white granite and above this level will be white glazed terra cotta, sand blasted to a soft velvety surface, the roof being covered with red terra cotta tiles, resulting in a completed exterior of a soft whiteness particularly adapted to our California atmosphere. The roof will be crowned with two belfries from which will peal forth at noon of each day the national anthem. The main entrance is located at that section of the building nearest Mason street.

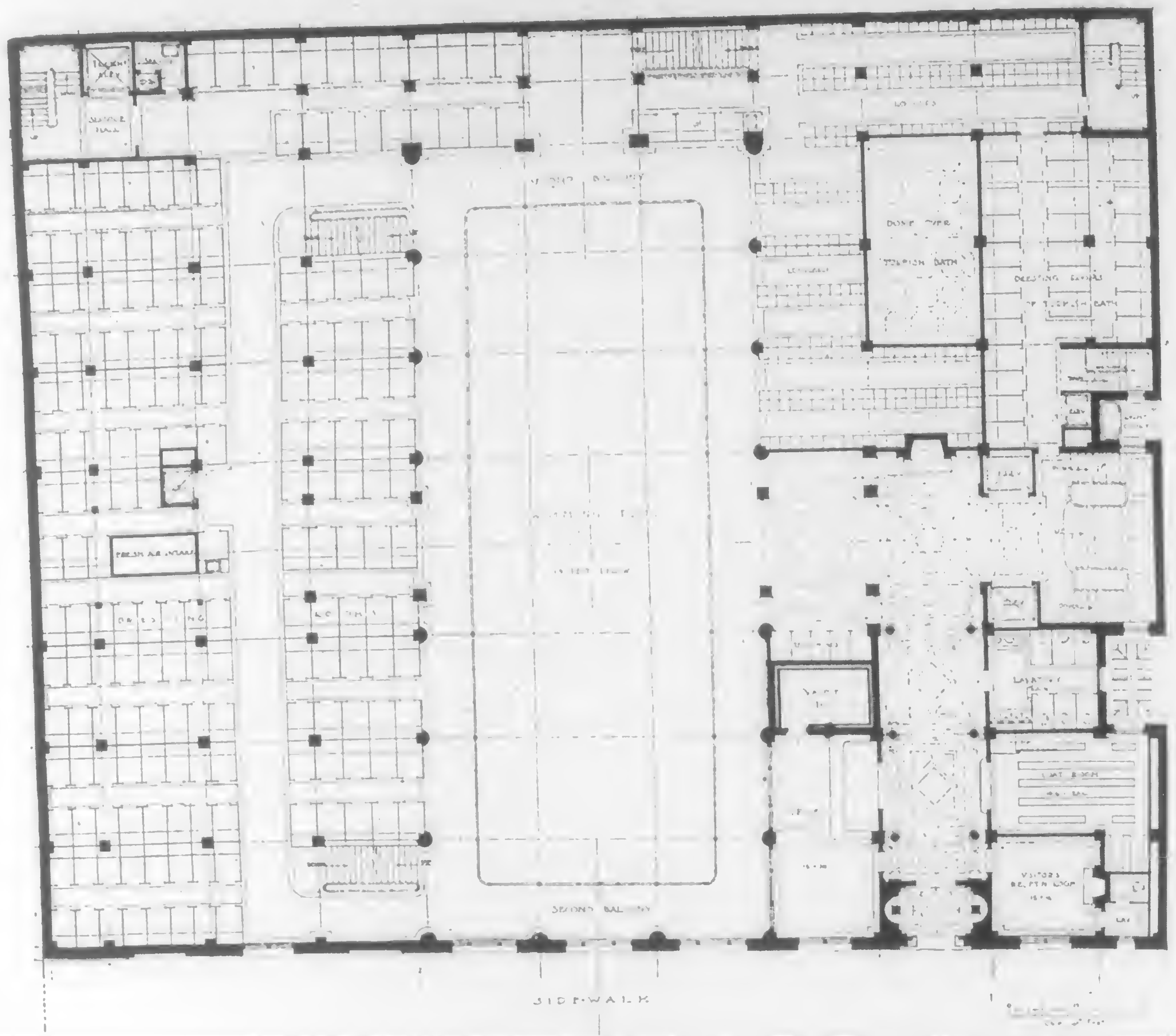
The first story including the levels below the sidewalk is devoted entirely to the uses of the main swimming pool, dressing and locker rooms, lockers, Turkish bath, shower and bath rooms and necessary adjuncts; in



Plan of Second Floor Olympic Club Building. Henry A. Schulze, Architect



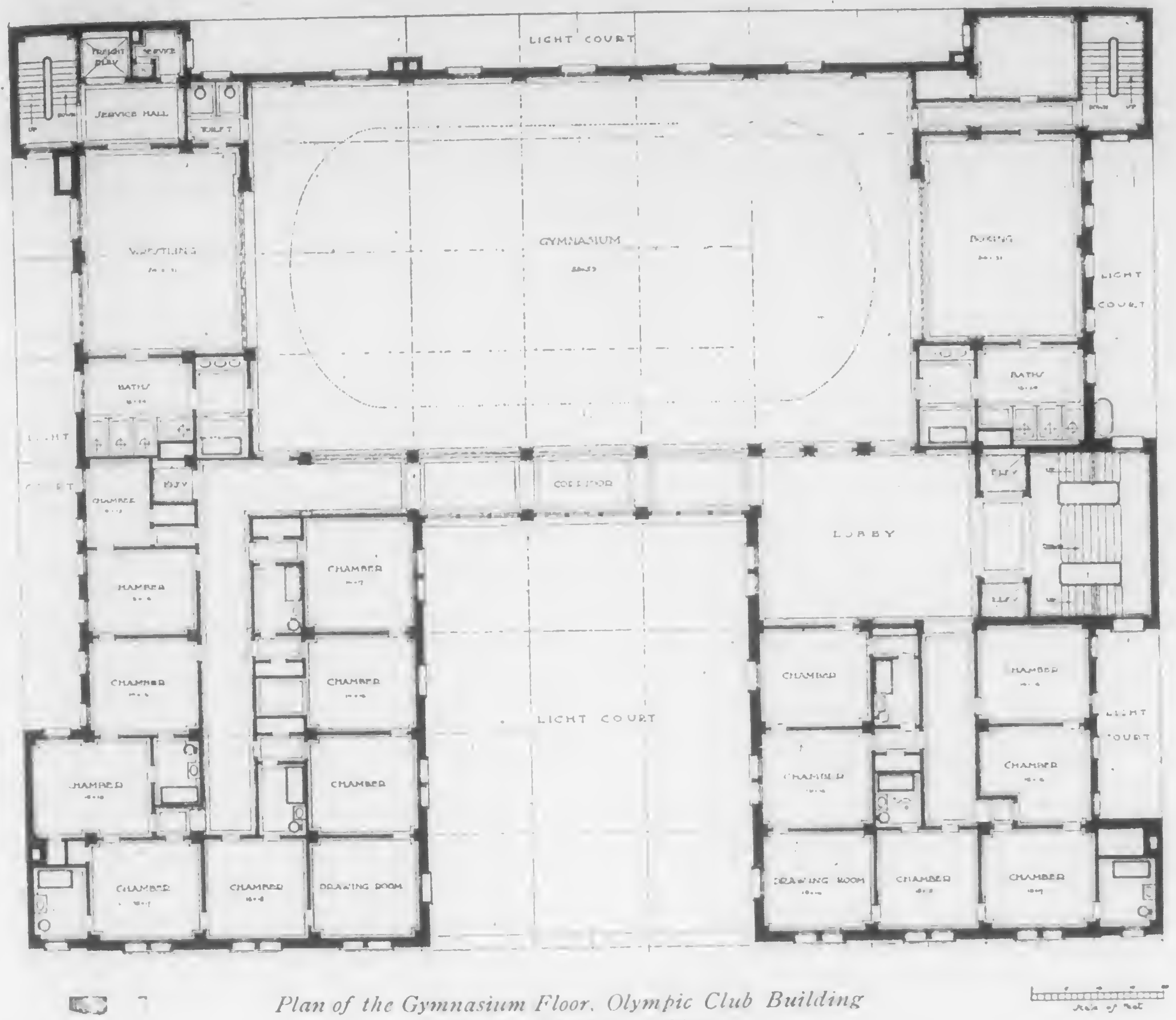
Typical Floor Plan. Olympic Club Building. Henry A. Schulze, Architect



Plan of the Swimming Pool and Balcony Floor. Olympic Club Building
Henry A. Schulze, Architect

the second story are located the rooms devoted to the social life of the club above which each story is divided into suites of rooms arranged after the most approved hotel system. At the northerly half of the building is located the gymnasium occuping the fifth, sixth and seventh stories, over which are located five hand-ball courts, one of which is of official size.

In order that the social life of the club should not be too far removed above the main entrance and that also the swimming and bathing facilities should be as convenient as possible to this same entrance, vast areas being required for these features in a club of so large a membership as that of the Olympic, it became necessary to take the sidewalk as the horizontal dividing line and work up and down therefrom; every portion of the three levels below the sidewalk is devoted to the salt-water swimming pool, 35 feet wide, 100 feet long and 10 feet deep, with locker and dressing rooms, Turkish bath, shower and bath rooms adjacent, the swimming pool forming a central court to this arrangement, four stories high and open to the outside air on which the locker rooms abut in such a way that they receive at all times fresh outside air and ventilation, in addition to which a forced or blast system of ventilation will ensure a cool and fresh atmosphere in the remotest sections of these lower stories. All shower and bath rooms are piped for fresh and salt water. The service entrance is on the westerly end of the building. The arrangements for sanitation will be complete and perfect, a special tunnel being run down Post street for over two blocks to connect directly with the main street sewer. Pumping will thus be avoided from the lowest levels of the building.



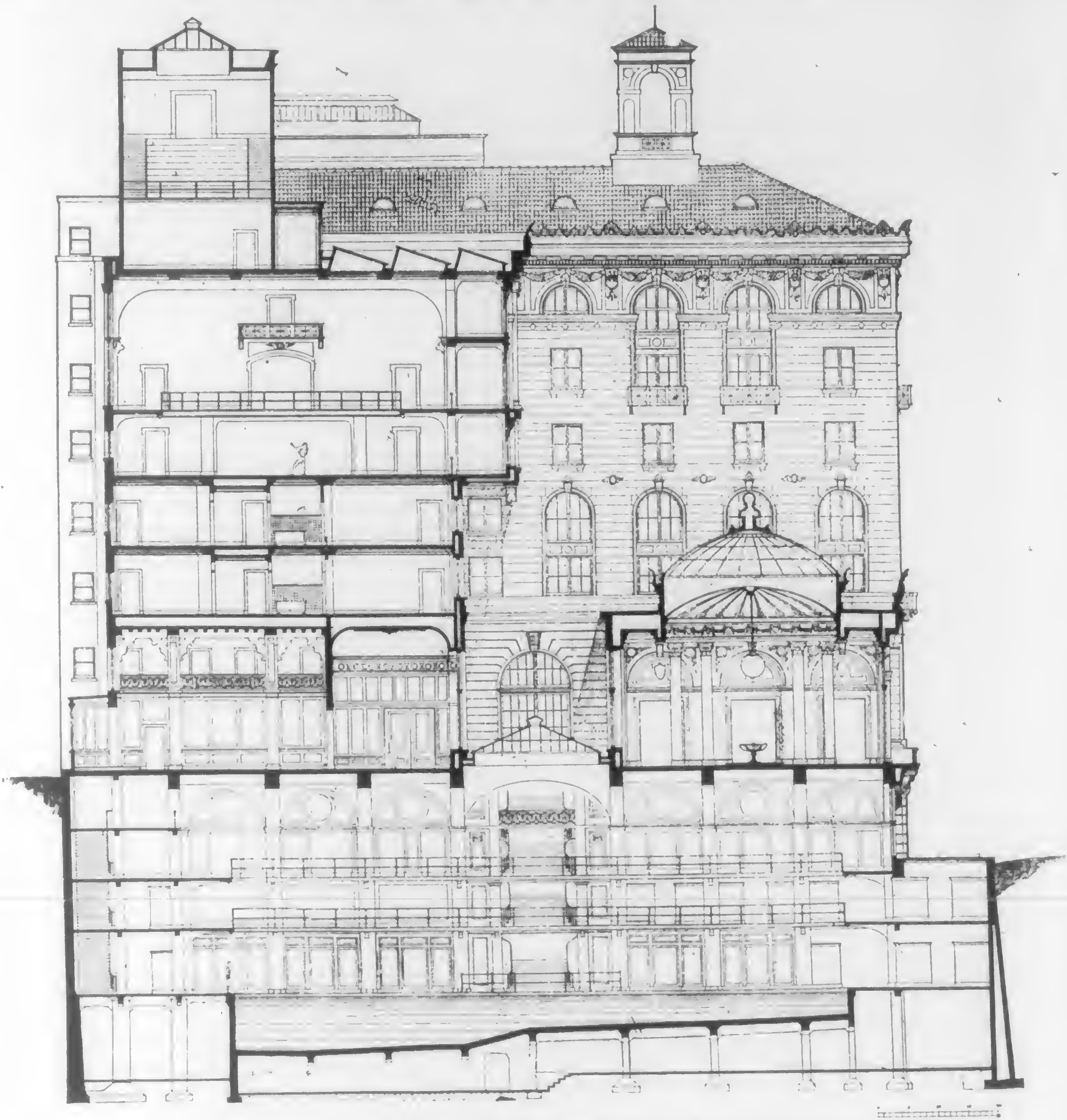
Plan of the Gymnasium Floor. Olympic Club Building
Henry A. Schulze, Architect

The social life of the club is to be located in the second story, this entire floor being divided for this purpose into a dining room 56 feet by 69 feet, palm room 44 feet by 48 feet, library 29 feet by 54 feet, social hall 40 feet by 47 feet, billiard room 34 feet by 50 feet, banquet room 19 feet by 49 feet, and adjuncts of card rooms, telephones, etc.

All comforts and conveniences will be perfect in their appointments, no hotel being equipped with more modern features than will be found here. Ice water will be on tap everywhere and in winter the heat and ventilation will be automatically regulated throughout by means of thermostats. The elevator service will be ample and of the finest degree, the interior decorations and finish will be unsurpassed, particularly the Turkish bath where Oriental effects will predominate. This feature of the club building will be specially attractive in amplitude and appointments.

The six stories at present contemplated will involve an expenditure of $750,000 and the completed building of twelve stories will necessitate an outlay of about $1,000,000.

The swimming pool is now nearly completed. On the first day of July it will be filled with warm salt water, a temporary building will enclose the pool and the members will thereafter have the opportunity to take the usual swim during the hot dusty months of the summer, or a Turkish bath, as may be their desire.



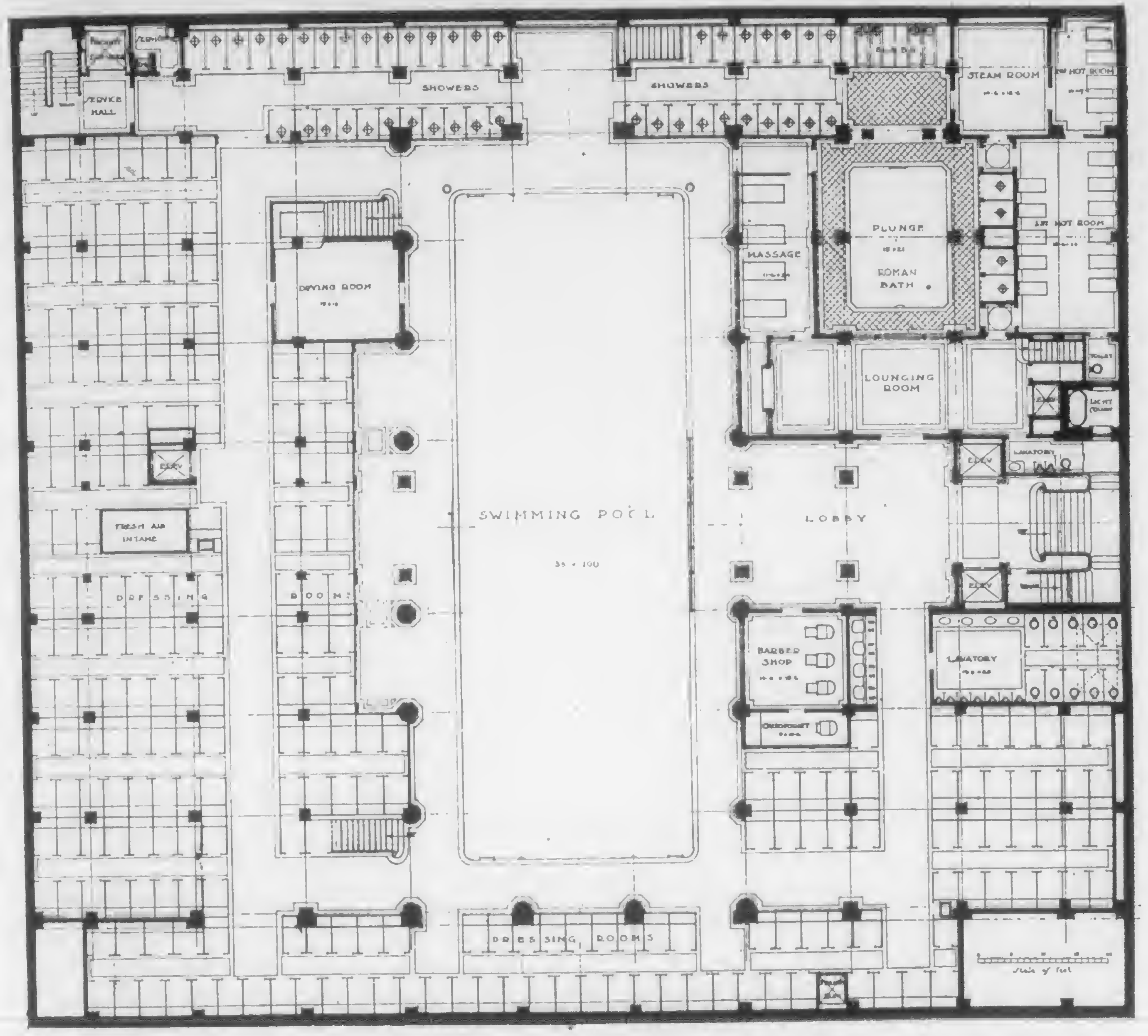
Side Elevation, Olympic Club Building, Showing Three Stories Below Street Level
Henry A. Schulze, Architect

San Francisco Architectural Club

By CARL E. ROESCH

THE official occupation of the San Francisco Architectural Club's new quarters was auspiciously celebrated on April 20th with what was considered one of the most attractive and interesting affairs ever given by the club. A varied program was presented for the amusement of those assembled, consisting of two separate sketches put on by those members who compose the theatrical branch of the organization. In addition to this an attractive vaudeville bill was rendered, the character of the evening's amusement proving that theatrical, as well as architectural ability, exists among those forming the personnel of the club.

A souvenir program of the affair occasioned much favorable comment, the advertisements being particularly amusing, as they played upon the personal characteristics of different club members, who have recently



Plan of the Swimming Pool Floor, Olympic Club Building
Henry A. Schulze, Architect

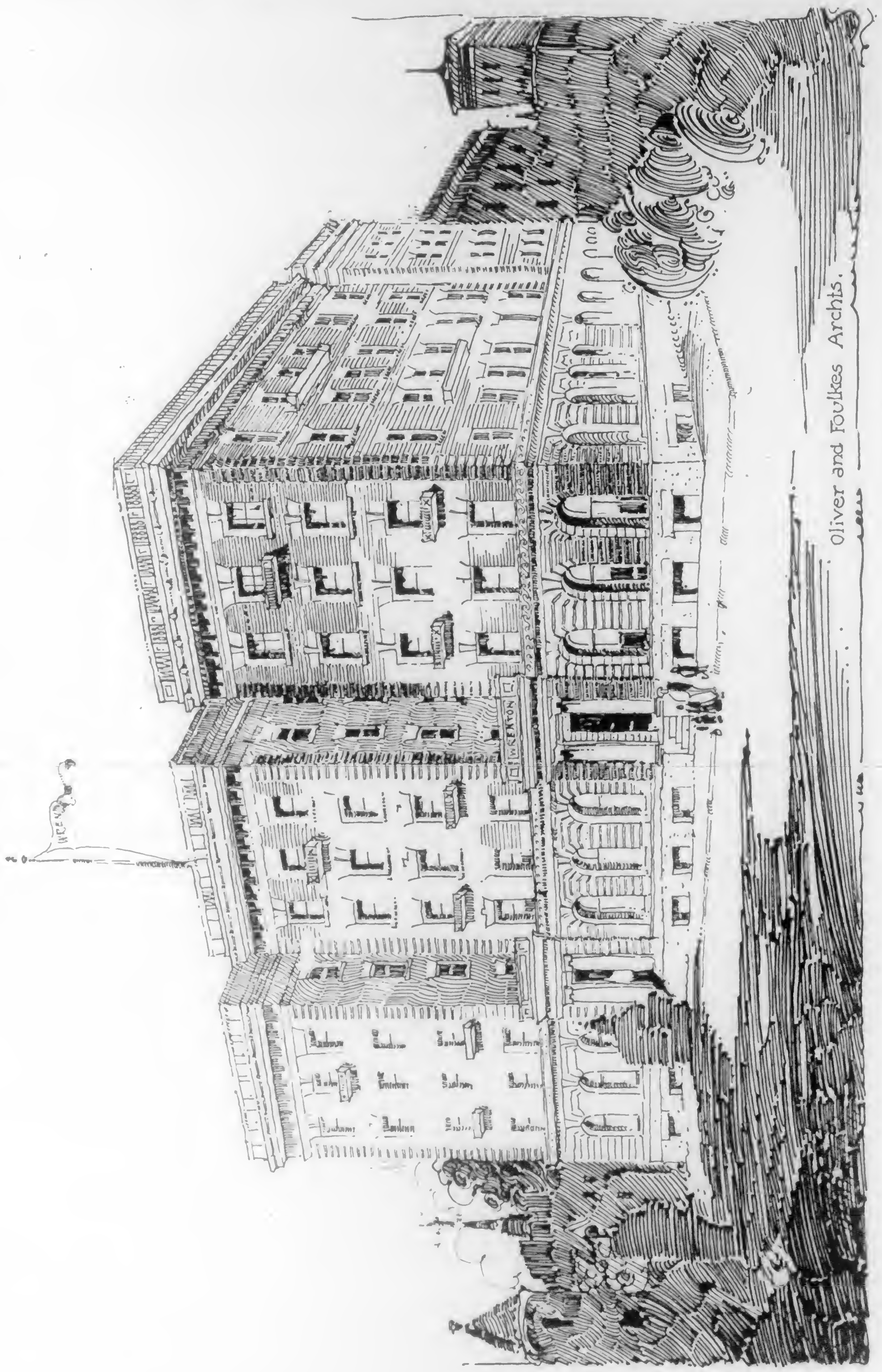
entered business for themselves. The cover design by C. A. Neubauer of the club showed much originality and was effectively rendered.

At the regular monthly business meeting various subjects of importance were presented for discussion, particularly the advisability of incorporation. Realizing the standing which such incorporation would give the club the suggestion was received with hearty approval and was favorably acted upon. This, together with membership in the Architectural League of America, the parent body with which most of the clubs are affiliated, places the local organization on a plane with the best clubs in America.

Unusual interest has been shown in the life and sketches conducted by Instructor Sewell, a man of marked ability, and a particular aptness for imparting knowledge to others. This is apparent by the improvement shown in each succeeding lesson in the sketches produced.

The advisability of holding an exhibition met with favor, and committees toward that end were appointed. It is the intention to make this a general exhibition showing the work of the architects in the various coast cities and if possible have the drawings shown at the annual exhibit of the A. L. A. brought to the coast.

The Los Angeles Club will hold their exhibit May 20th, and their drawings will be secured if possible, as well as sketches from the Portland Club, and Sketch Club of Salt Lake City, Utah. These, with the work of our local architects, should make a decidedly interesting exhibition.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Family Hotel, San Francisco, for the Mary A. Gaffney Estate Oliver & Foulkes, Architects

Citizen's Bank, Alameda. Constructed of Reinforced Concrete. Oliver & Foulkes, Architects

An Apartment House with Plenty of Light

By EDWARD T. FOULKES, Architect

IN NO other city in the United States does direct sunlight play so important a part in the planning of a hotel as in San Francisco, where sunshine can be enjoyed in the rooms every month of the year. This requirement, together with the desire to get the maximum number of rooms with a possible outlook upon the streets, determined the typical floor plan of the new family hotel to be erected by the Mary A. Gaffney Estate at the northwest corner of Sutter and Taylor streets.

There are forty-five rooms, of good size, on each floor, together with a serving room, linen room, public bath, etc. The rooms and baths are so arranged that suite combinations are easily made possible.

The first floor is given over entirely to hotel purposes—namely the spacious lobby, the main dining room with ten private dining rooms, children's dining room, a large ball room, a Japanese tea garden, et cetera.

The exterior will be of red brick laid with white mortar joints and with white marble trimmings after the brick colonial style of architecture in which color adds so much to its charm. The interiors will likewise be of simple colonial style in the main rooms, dependence being placed upon good materials carefully executed for effects rather than elaboration.

The Reconstruction of San Francisco

By WM. HAM HALL, C. E.

THE rapid, economical and safe rebuilding of San Francisco depends largely upon good relations and straight business between those who have to pay for it and those who conduct the work. As yet this work has barely commenced. Though much temporary construction, necessary to current business, has been done, and much rehabilitation of injured but not destroyed steel frame structures has been effected, the new upbuilding of the permanent city has barely commenced. In the very nature of things, it could not be far advanced to this time, but soon we should see great strides toward this end.

Will the results of these first steps inspire investors with confidence? In the aggregate, will the outcome of this season's work, from the investor's standpoint, encourage to other seasons of intense building activity?

Business Bargaining for Building

The kind of business bargain whereby an owner arranges to have his building erected is usually selected by himself. Ordinarily, the contractor can do no more than express a preference for some particular system and refuse to sign up on the basis of some other system. But, in normal times at least, only contractors who meet the owner's ideas as to a business basis for the bargain, can hope to get the job. Now, in the best of times there is in the aggregate a large proportion of dissatisfaction on the part of owners, with the results of business settlements on building jobs. And, as it is they who really establish the contract business systems, and select the one in each case for an agreement, it must be they who are largely responsible for such outcomes. Architects, of course, advise owners as to these matters, but it is the owner's decision which determines the course taken.

There is, as a rule, no necessity for an owner being disappointed over the immediate outcome of his building venture. Such disappointment is usually, in great measure at least, the result of his own unfamiliarity with building business systems. There are four business bases on which you may bargain to have a structure built. Looking at them from a commonsense business standpoint, they may be ranked as the Distinctly Bad, the Inequitable and Unsafe, the Good but Defective, and the Safe and Sensible systems. I describe them in the order above stated.

The Lump-Sum Contract Basis

When you place your building with a contractor on the Lump-sum contract basis, you put upon him an incentive to "scamp" your work—in order that he may not lose or that he may make money. This incentive is inseparable from the system whereunder your contract is made, which system is distinctly bad.

Your contractor is to receive just so much money to cover all costs and contingencies and the profit to himself. The risks are all placed on him. The incentive to sacrifice your interests in his own behalf is direct and undeniable. It will not operate, of course, if he is entirely honest. But the incentive is there, just the same, and we all have some failings.

The world's experience has abundantly proven that the working of this Lump-sum contract system is demoralizing to contractors, and to the detriment of owners.

In taking work under competition upon this Lump-sum basis, the contractor is sure to lose on some jobs, and to make little or nothing on others. So that even your job, for which you pay a sufficient price, may be "skinned" by him, in order that he may even up the others whereon he either makes nothing or loses.

This is the position in which a contractor is placed who habitually takes Lump-sum contracts in competition with other contractors; except it be in small circles of the most favored contractors, under supervision of the strongly entrenched architects having the very best clientele.

Remember the labor you put upon each of a number of contractors in preparing bids on your work. Each one will probably have to estimate a number of jobs before he gets one. Honest estimating such work is a considerable labor. The ordinary outcome is, either haphazard estimating and subsequent fighting the architect to keep a profit-margin clear, or a secret combination of bidders against you.

Under this system the contractor is frequently forced into sacrificing either his own or his principal's interests. A supply of men has not yet been made available for the contracting business who are going to lose heavily every year or two, for the benefit of owners who insist upon following a system which makes necessary unexpected and unavoidable sacrifices of interest somewhere.

The contractor who is worthy of being asked to estimate and bid on your work at all, is worthy of being given it on a fairer basis than the Lump-sum contract, especially if he has to compete with others in getting it.

The Percentage-of-Cost Basis

When you place your building in the hands of a contractor on a Percentage-of-cost agreement, you put upon him an incentive to make the work cost more than it ought to cost—in order that he may make more money. This incentive is inseparable from the basis upon which you place your work, which basis is, to say the least, inequitable and unsafe.

Your builder is to receive for his own, ten to twenty cents, according to the agreement, for every dollar the building costs you. The more he does, without positive scandal, allow the structure to cost you, the more he receives from you for his services. The less cost which he may succeed in completing your building for, the less he receives from you for his services. The risk is all placed on you. In this case, just as in that of the Lump-sum contract, the money incentive to sacrifice your interest in his own behalf, is direct and ever present with the contractor. It may not operate. But the incentive is there, all the time.

The system tempts the contractor to put the estimate of cost, for your architect's comparison with estimates by other contractors, at less figures than the work can be well done for. What matters it to him if the estimate be too low? If the work costs more, he makes more. He can only lose a chance to estimate again for one architect or one owner. But then, if the system puts all contractors on a par in this regard, the individual contractor loses not even this privilege by estimating too low.

Here again, the fact cannot be denied; contractors under the Percentage system are forced into a false position. The system puts a premium on sharp practice. Its principle is exactly the wrong one, on which to get a good-faith service.

Ask yourself: Do you know of a large supply of men available for any business, who are intent upon doing good work and saving money for someone else, at sacrifice of money to themselves? Until you can produce such a supply of men you probably cannot have your building work advantageously executed on the Percentage basis.

The Cost-Plus-Fixed-Sum Contract Basis

When you place your building in the hands of a contractor under the Cost-plus-fixed-sum agreement, you put upon him an incentive to neglect your work, should he see that he can profit from other jobs by so doing. This incentive is inseparable from the system, which, though an improvement on the two preceding, is yet defective.

Your contractor is to receive from you a pre-determined sum for himself, in consideration for your building being erected under his supervision or that of some of his employees or associates, at your expense. It matters not to him what the cost to you may be; his profit is assured. So long as he does not let the cost to you so much exceed your expectations as to sacrifice your good-will, he loses not even your clientage, by allowing the cost to run up. Again the risk is all placed on you.

Now a contractor can take an immense amount of business upon such a basis; for, in any event, he cannot fail to make his profit on every job. He might have jobs in every city of the United States at one and the same time, to his own advantage in every case: the limitation being only the degree wherein he could, without scandal, neglect every job in order to take others.

If there is competition in estimating for the securing of work on this basis, almost the same incentive is present with the contractor, to figure too low, as is present in estimating for contracts on the Percentage-of-costs basis. He would get a correspondingly less sum fixed in his contract, for his profit, no doubt, if he estimated low; but then, he would not get the contract at all, probably, if he did not estimate lower than the others, and his interest lies in getting as many contracts as possible, in each of which there is some certain profit and not any risk.

The Cost-plus-fixed-sum contract, while it is free from the grosser faults of the Lump-sum and the Percentage systems, yet has this failing, which is serious and which will prevent the system from being generally adopted.

The Cost-Plus-Premium-Contract Basis

When you place your building in the hands of a contractor, on the Cost-plus-premium agreement, you put a premium to him, on extra endeavor in your behalf by him, and you put a penalty on him for extra cost to you, over and above the estimate of cost. This premium and penalty feature constitutes the essence of the Cost-plus-premium contract. The system is sensible and safe.

Having agreed that, on the basis of the estimate, your contractor is to receive a named sum as his profit, your agreement further says, that of all he saves for you, under the estimate, you will pay him, in addition to the named sum, a certain percentage as a premium; and that of all excess cost over estimate (not occasioned by extra work, of course), he is to bear a certain proportion, to be retained by you out of his premium. The risk is equitably divided between you and the contractor.

This system does not tend to make gamblers of contractors, nor conduce to "skinning" of work, as the Lump-sum system does. It does not conduce to under-estimating, and to running up the cost of work, as the Percentage system does. It does not conduce to neglect of the work, as the Percentage and Cost-plus-fixed-sum systems do. It does not conduce to antagonism between owner and contractor and between architect and contractor, as all the other systems do.

This system puts a premium on good faith, energy and special ability in the contractor, for the owner's benefit as well as the contractor's profit, and it puts a penalty on bad faith, neglect and incompetency in the contractor, for the owner's protection. But it does not penalize the contractor for what he cannot reasonably foresee, nor beyond the limit of his profit, in any case.

The principle of this system of contract agreement is absolutely right, in the honest interest of all concerned. All that can be said against it is that its application may be inconvenient in some cases and under some business conditions.

The Right System for San Francisco

For many years nearly all the contracting in San Francisco was done on the Lump-sum basis. The building business in general became much demoralized under its influence. The contractors said that the owners were responsible for it all, and that they, the contractors, would gladly get away from it if they could.

The great fire of April, 1906, was followed by labor and material supply conditions such that the conractors refused to take Lump-sum conracts. Owners and architects could not but acknowledge the impossibility of closely estimating on the cost of work, for the time being, so that during the first year of rebuilding nearly all of the work has been done on the Percentage basis, and the balance chiefly on the Cost-plus-fixed-sum basis.

This was a complete revulsion from the old system. Formerly all of the risk was placed on the contractor. The change placed it all on the owner. The outcome has not been satisfactory to owners. Probably, before long conditions will be such that most owners will refuse to enter into percentage contracts. The first tendency will be to go back to the Lump-sum system. It would be a misfortune for San Francisco if this course were followed. Things are bad enough in building now; but under lump-sum contracting they would be infinitely worse. Every architect and contractor knows this to be true, and every frank and outspoken one will tell you that it is true. Every owner is materially interested in preventing a return to the demoralizing system of the past at such a crucial time in the rebuilding of our city.

There is no necessity for such a course. The Cost-plus-premium system of contracting has for the owner every fair advantage and protection which the Lump-sum system has. It is equitable and stimulating to the contractor, and enables him to profit by good faith, energy and ability. It has none of the vicious tendencies of the Lump-sum system, none of the weaknesses and loopholes of the Percentage system. It does not tend to demoralize contracting as a business. It is most favorable to clean business, and consequently to good construction at least cost.

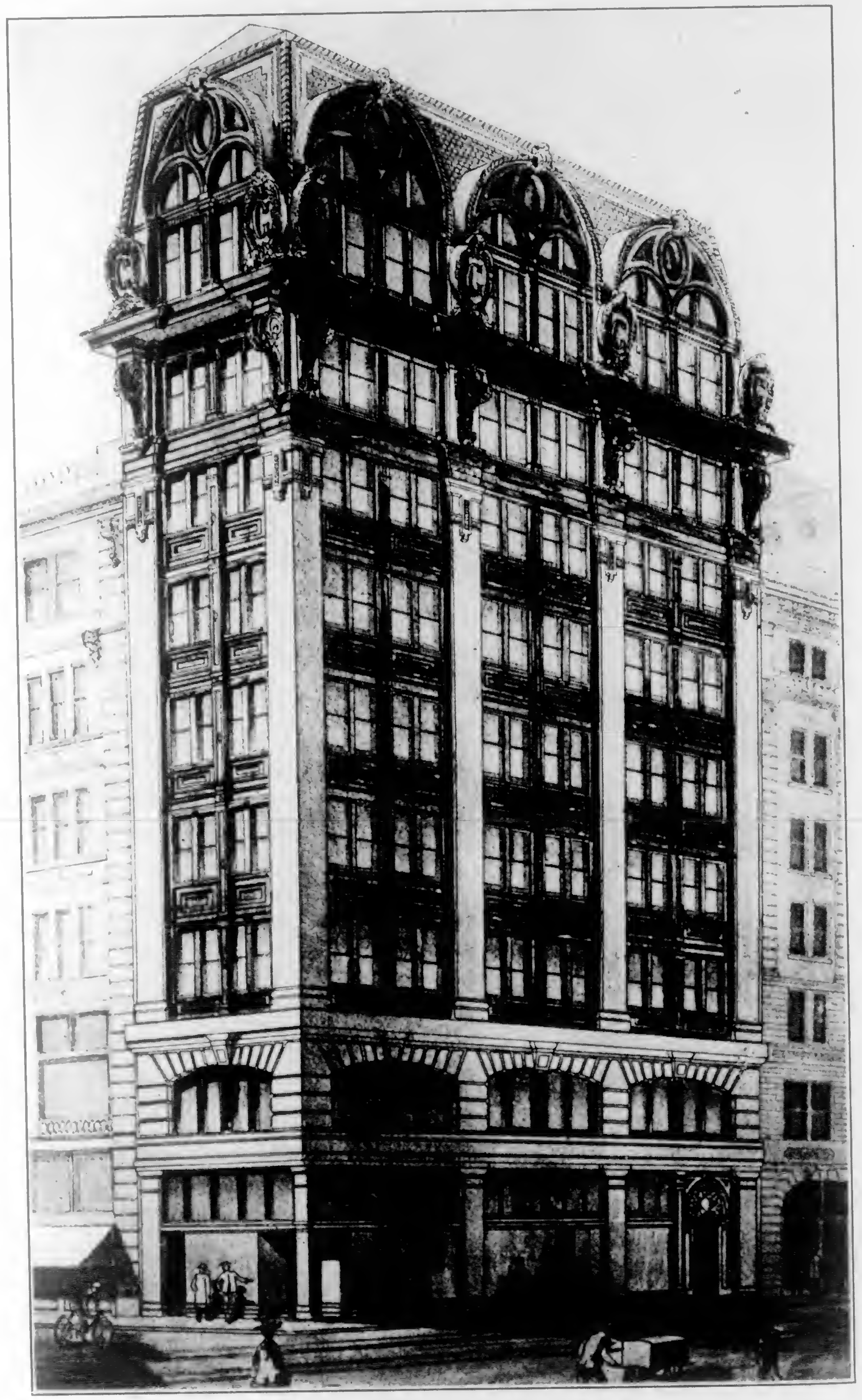
It would seem that the property owners and the architects just now have the opportunity to put the building business on a clean business basis. Not an untried one; but a fully proven one. As the professional adviser of the owner, much responsibility rests upon the architect.

* * *

"All right on behind there?" called the conductor from the front of the car.

"Hold on," cried a shrill voice. "Wait till I get my clothes on!"

The passengers craned their necks expectantly. A small boy was struggling to get a basket of laundry aboard.



The M. A. Gunst Building, Third and Mission Streets, San Francisco
Lansburgh & Joseph, Architects

Equipped with Otis Elevators

Reinforced Concrete Practice in San Francisco --- Column Design

By WM. HAM. HALL, C. E.

THERE are many reinforced concrete buildings in course of erection in San Francisco. The practice, in matter of design, is, to speak moderately, incongruous. The eighteen column examples herewith presented illustrate this fact. They represent the standard first-story interior columns in eighteen different buildings, and the drawings are to uniform scale from actual measurements.

Reinforced Concrete Practice in San Francisco

-- Column Design.

No.	Character.	No. of Stories	Heights of Columns.	* Areas of Concrete. Total	Banded.	* Area of Steel	Ratio of Steel to Concrete. To Total.	To Banded.
1	Warehouse.	6 & b	16' 0"	709.3	449.7	2.65	0.37	0.59
2	Store.	3 & b	17' 6"	564.9	396.9	3.12	0.55	0.79
3	Store.	5 & b	13' 6"	570.5	318.5	3.53	0.62	1.11
4	Office	3 & b	17' 6"	769.8	569.0	6.24	0.81	1.10
5	Office & Warehouse.	3 & b	17' 0"	328.2	223.9	3.12	0.95	1.39
6	Office	8 & b	17' 0"	433.5	309.5	4.71	1.09	1.52
7	Factory.	5 & b	13' 6"	597.7	323.8	6.28	1.05	1.94
8	Office	7 & b	17' 6"	471.1	292.5	6.12	1.30	2.09
9	Warehouse	6 & b	15' 0"	711.9	400.4	15.12	2.12	3.78
10	Factory.	4 & b	14' 0"	391.9	259.8	9.00	2.30	3.46
11	Office	3 & b	17' 9"	247.7	149.8	6.28	2.54	4.19
12	Store.	6 & b	22' 0"	517.8		13.50	2.61	
13	Office	9 & b	20' 0"	462.8	269.1	19.24	4.16	7.15
14	Warehouse	8 & b	18' 0"	533.1	353.5	26.56	4.98	7.51
15	Office	8 & b	16' 6"	774.6	477.5	53.39	6.89	11.18
16	Factory.	4 & b	12' 0"	303.4	169.5	20.64	6.90	12.18
17	Warehouse & Office.	3 & b	15' 6"	453.2	173.2	22.81	5.03	13.17
18	Warehouse	8	10' 0"	479.0	257.7	56.55	11.81	21.94

* NOTE. All areas are given in square inches.

The proportion of reinforcing steel to the concrete in columns must ary somewhat, of course. The length and loading of column, the special design, the character of steel, the allowance for bracing, all call for more or for less steel in proportion to concrete, in each case. But safe, as well as economical, designing will always keep the total of these variations within moderate limits as compared to those shown by the figures of these ighteen examples.

Inspection of this data, even after allowance is made for the unstated possibilities in each case, is startling. It is not too much to say that they seem to put the designers of many of these buildings on the defensive. They (that is, the figures) stand forth and accuse each other in a scandalous manner. Probably something may be said in several of these cases to modify the appearances of bad design which the basic facts seem to onvey.

As a primary step toward analysis of this group of examples, just note that the percentage of steel, to banded concrete, in one six-story and basement warehouse column is about one half of one per cent, while in

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Reinforced Concrete Practice in San Francisco

Column Design.

No.	Character.	No. of Stories.	Heights of Columns.	* Areas of Concrete. Total.	* Areas of Concrete. Banded.	* Area of Steel.	Ratio of Steel to Concrete. To Total.	Ratio of Steel to Concrete. To Banded.
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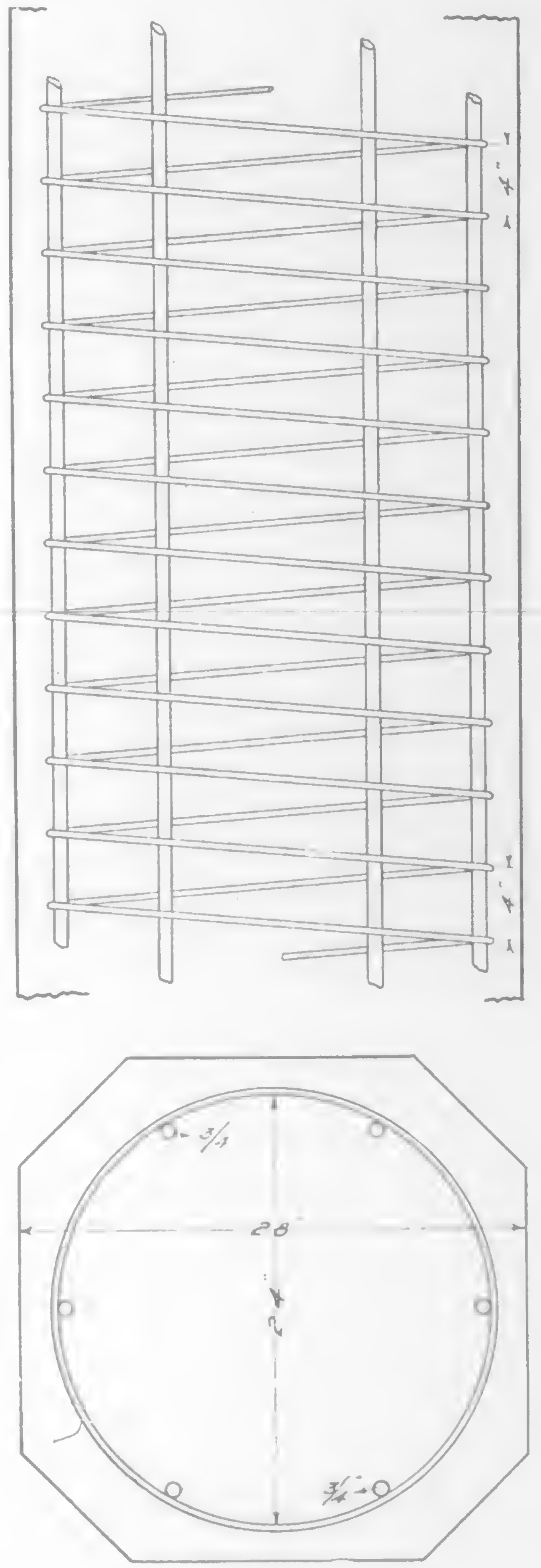
Inspection of this data, even after allowance is made for the unstated possibilities in each case, is startling. It is not too much to say that they seem to put the designers of many of these buildings on the defensive. They (that is, the figures) stand forth and accuse each other in a scandalous manner. Probably something may be said in several of these cases to modify the appearances of bad design which the basic facts seem to convey.

As a primary step toward analysis of this group of examples, just note that the percentage of steel, to banded concrete, in one six-story and basement warehouse column is about one half of one per cent, while in another eight-story and basement warehouse column it is about twenty-two per cent. Apply a few figures and a little reasoning all along the list of examples, and see where you land.

These column plans and figures, selected from a much greater number collected, constitute the first of several exhibits intended to illustrate, in a concise and practical way, some of the work of rebuilding San Francisco. Rejecting the excrescences and making allowances, such as seem reasonable, in the figures of the other examples, there is yet discernible a wide variation in the proportions of steel to concrete designed to effect substantially like duties. This should not be. Either safety or economy, or both, must be sacrificed somewhere, to bring out such a showing.

If there is too little steel in proportion to concrete, a column is liable to fail—there not being enough steel to prevent fracture or shear, consequent upon jar, shake, or loading. On the other hand, the first effect of too much steel in proportion to concrete is waste of money; and as the proportion of steel to concrete is made greater still, not only is the money waste increased, but again the column becomes unsafe—there not being enough concrete either to itself meet the imposed duty or to



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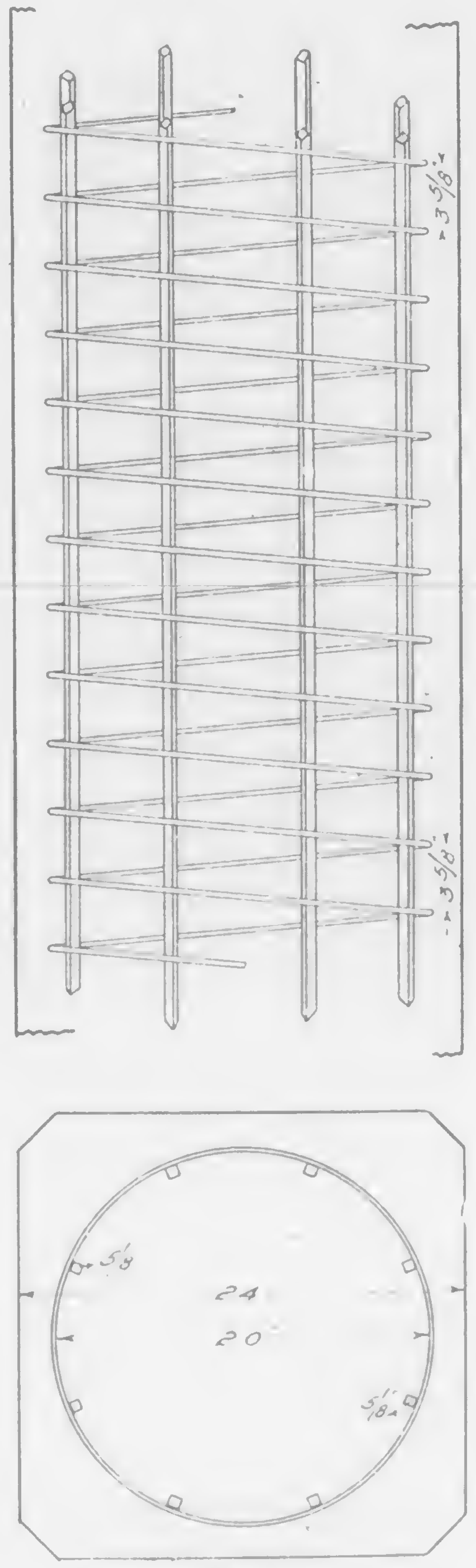

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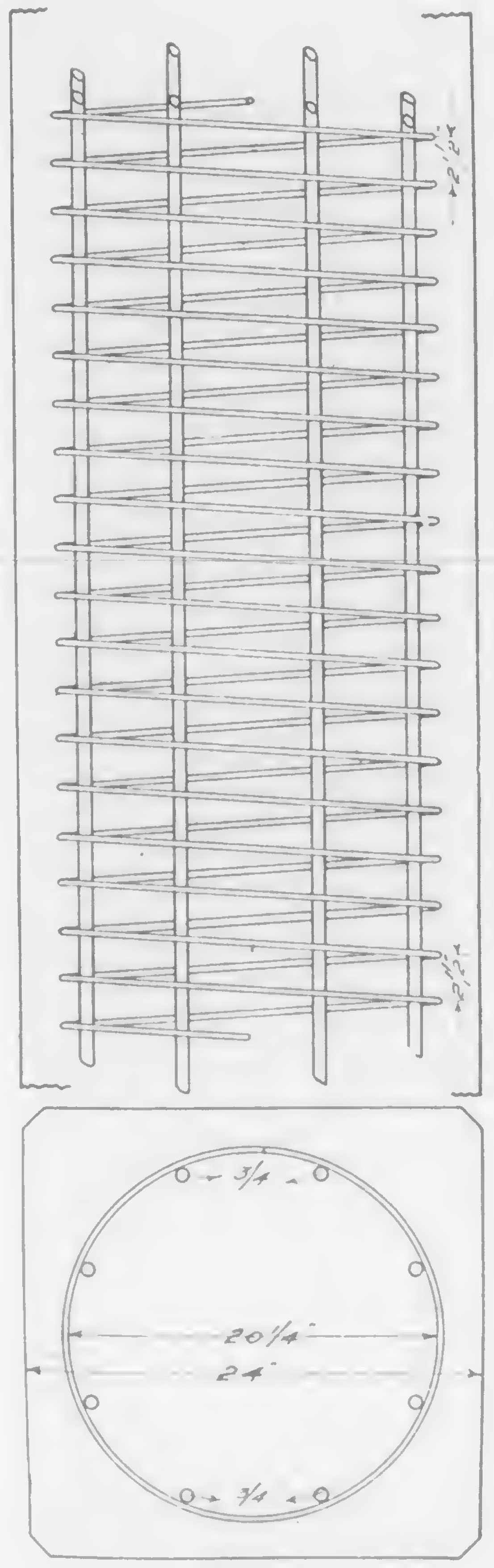

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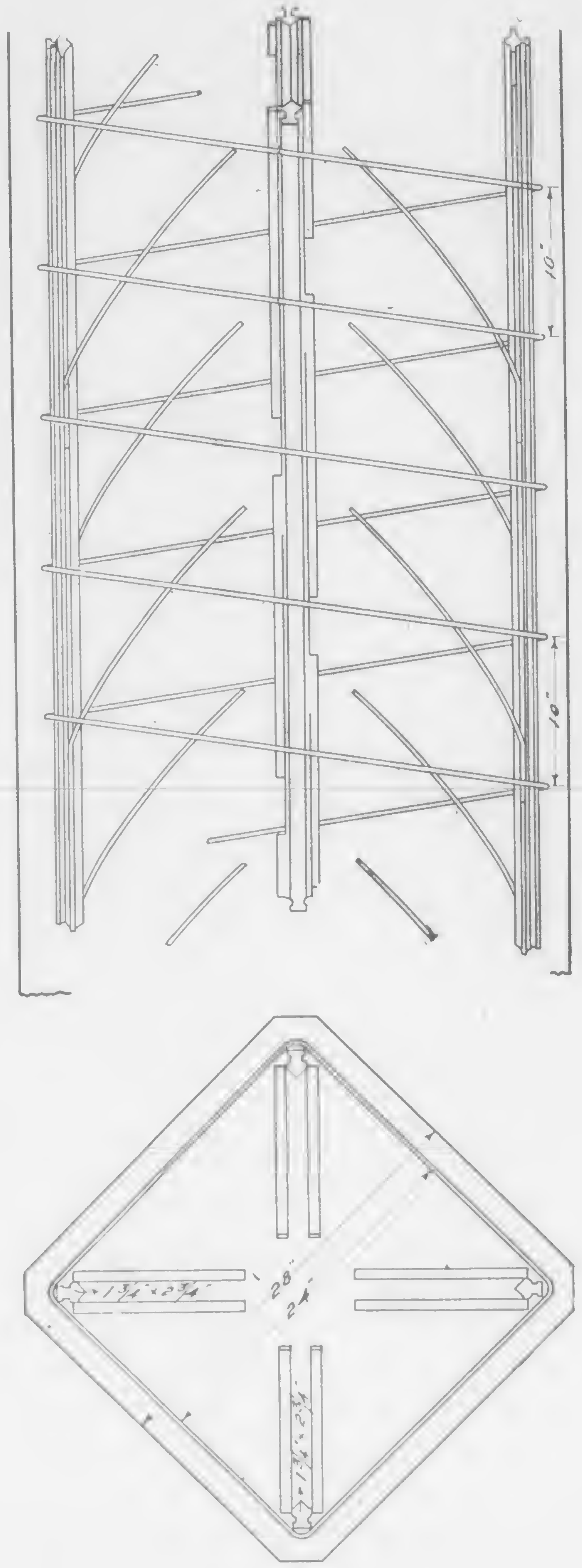
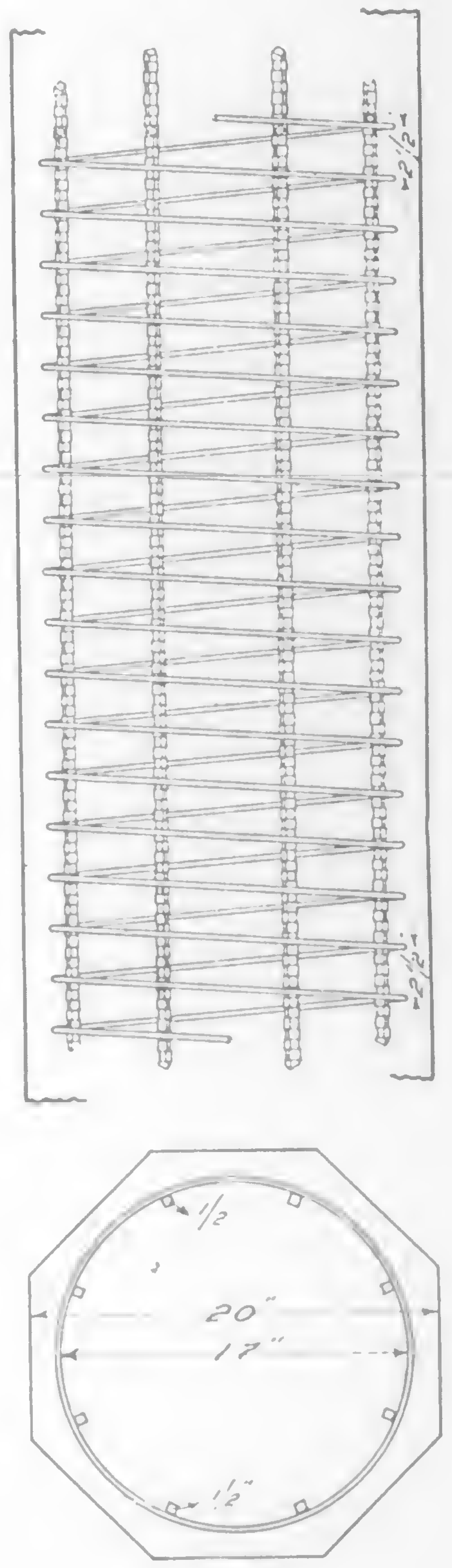


No. 4

hold in place and put into effect the purposes of the steel and of the excess steel in helping to meet that duty.

Viewed broadly, the designing of columns in the reinforced concrete constructions of San Francisco, seems to show: In some cases, either ignorance of what is safe, or a determination to save money at the expense of structural safety; in other cases, ignorance of, or lack of confidence in, what is just right in design, and determination to be on the safe side in the matter of reinforcement strength, at the sacrifice of economy; in still other cases, a weak concession to the desire to keep down sizes of interior columns, and as a consequence, the reduction of concrete and increase of steel to take its place in compression, until the danger point, at the other extreme of conditions, has been approached.

Of course, to discuss the problems of design, structurally, the column distances and proposed loadings in these examples must be known, and these will be given in a separate memorandum relating to the girders, beams and floor slabs. Probably the case is not so bad for some of the



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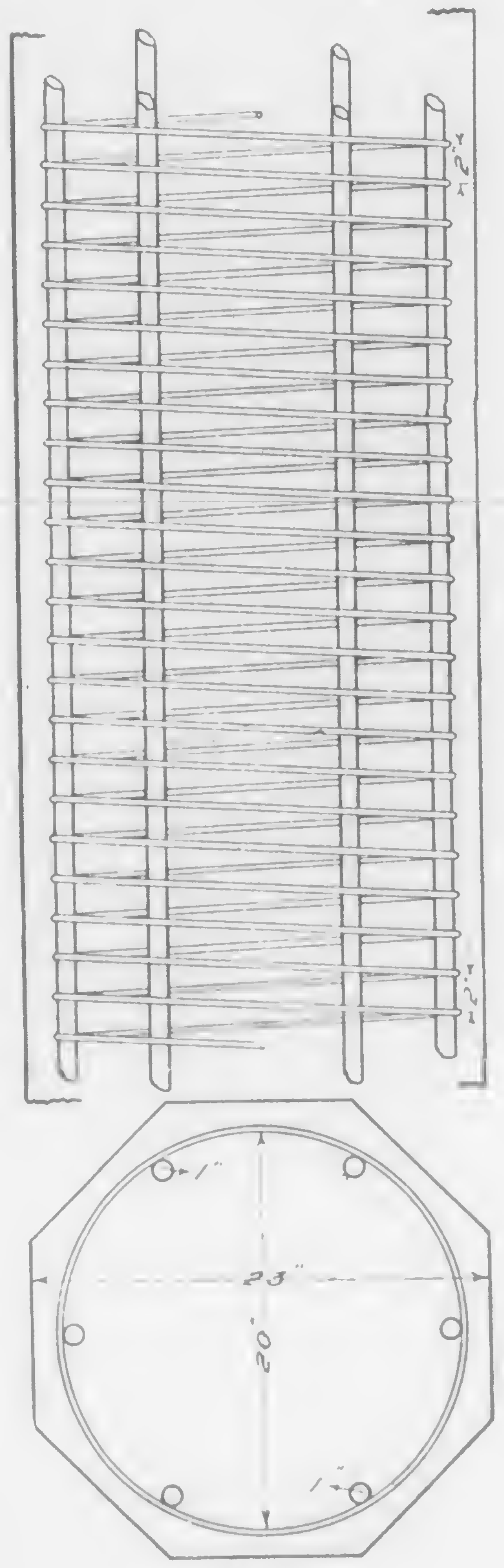
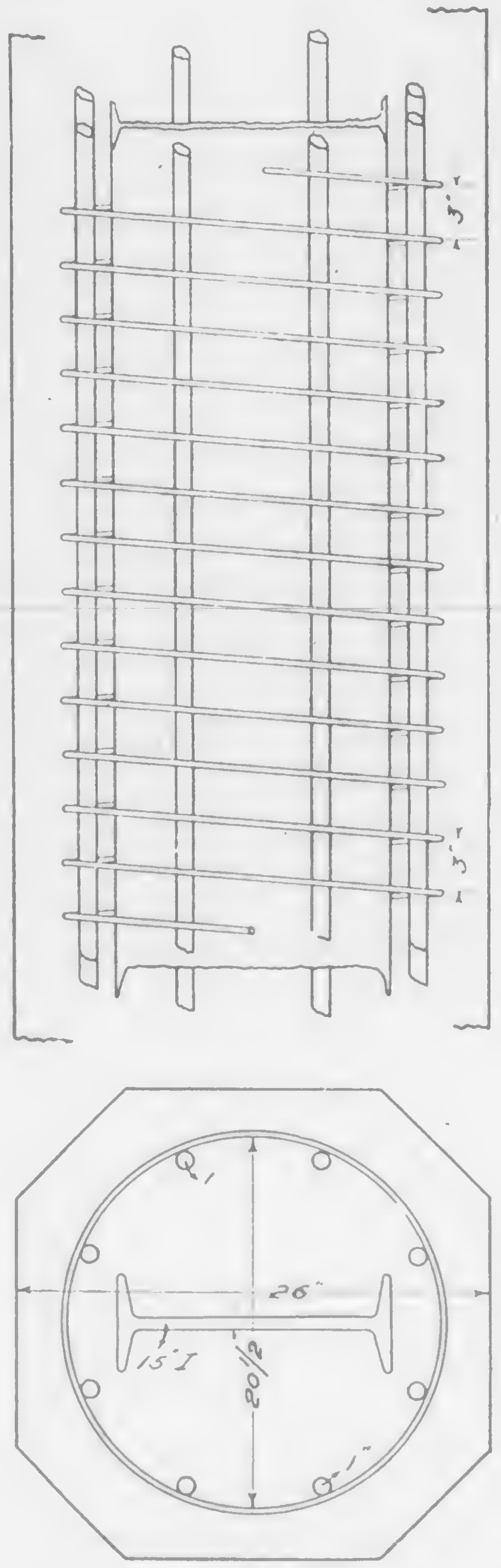


No. 6

structures as the present figures taken by themselves seem to indicate. But the broad primary lesson would remain unchanged—that, undeniably, in a number of these cases, design has not been governed by an expert study of economy, and in some of them, safety has not been well assured. Some of these plannings never would have been put into execution had there been competent alert inspection of building construction in San Francisco. The owners of others have had money wasted for them.

This exhibit is not to be taken as argument against reinforced concrete construction, but merely as emphasizing the necessity for such work being designed by competent specialists, only. A somewhat similar showing can be made with respect to steel skeleton designing in San Francisco, and I shall in a separate memorandum present it.

The accompanying cuts will be found of interest, not only as illustrations



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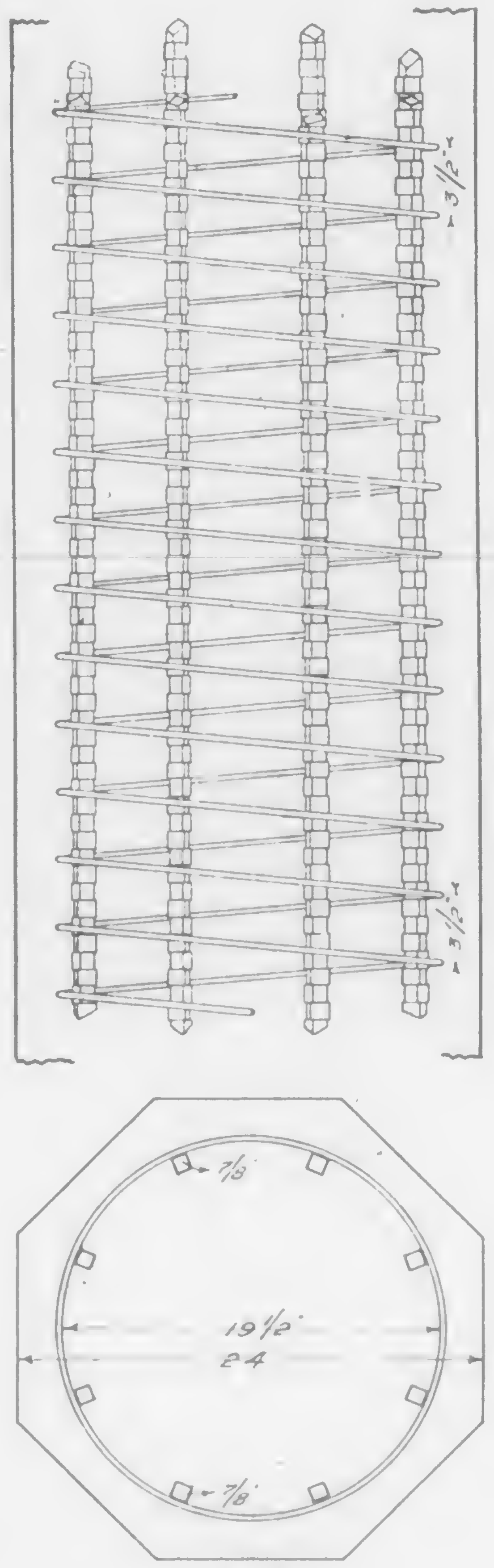


No. 8

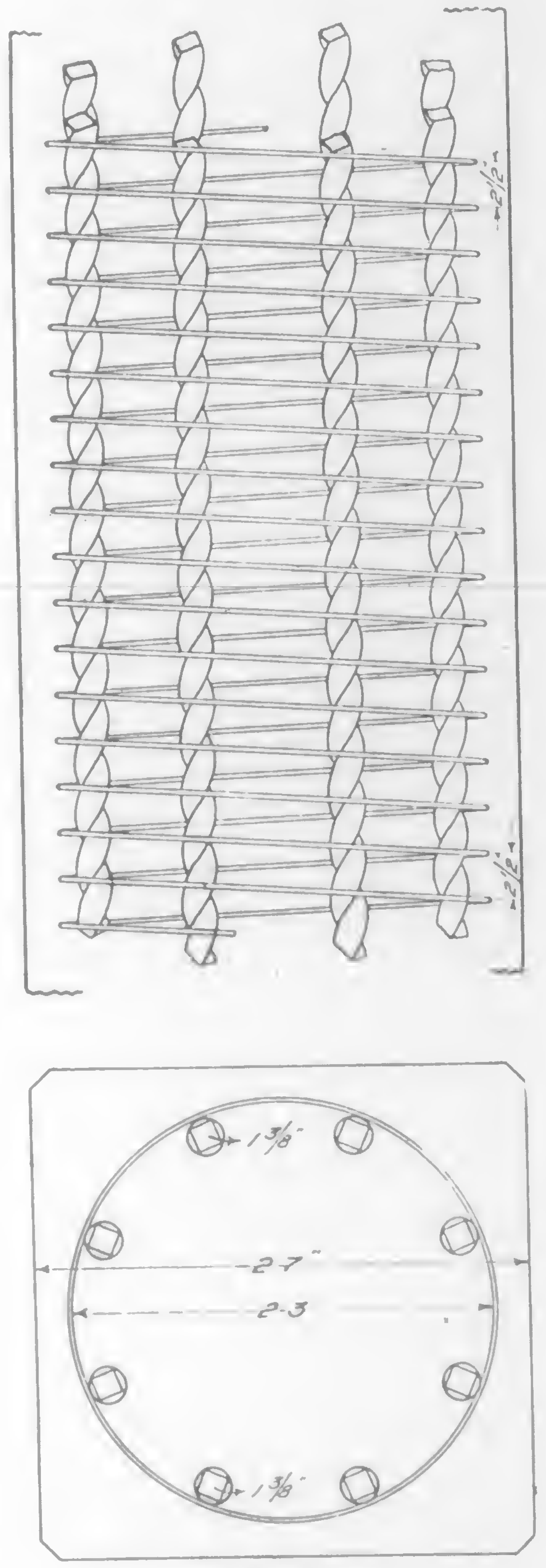
of the foregoing points, but as showing, in part, the wide range of planning covered by the San Francisco practice to this time. In fact, some are inclined to grope in parts of the domain of experiment which have already been explored by others elsewhere.

In these eighteen examples there are eight or nine columns, the figuring of each of which is materially different. Of the eighteen, one is a positive freak, quite ignoring the basic principles of the reinforcing of concrete; two others are oddities for whose use it would be difficult to find excuse; and in all, six or seven show at a glance that they came from inexperienced hands or for some reason are well away from good models and sound ideas. These points are quite aside from the question of too much or too little steel in proportion to concrete, already adverted to.

Not referring to forms of steel at all, there are shown examples of each of two good types of column reinforcement, namely the spiralled, Nos. 5, 6. 9 and others, and the strapped, Nos. 11, 13 and others. But each of these types is defectively applied in more than one case. The Kahn bar type, No. 4, is a specialty to which I do not allude, one way or the other, in this connection.

The eye-beam shown in column No. 7 is not counted in the estimate of its steel, seeing that only a few columns of the building were thus armored, and for a special local duty, only.

I have not named the buildings from which these eighteen examples are taken, for the reason that the questions to which they give rise can be as well discussed without locating them, and the danger of doing some personal in-



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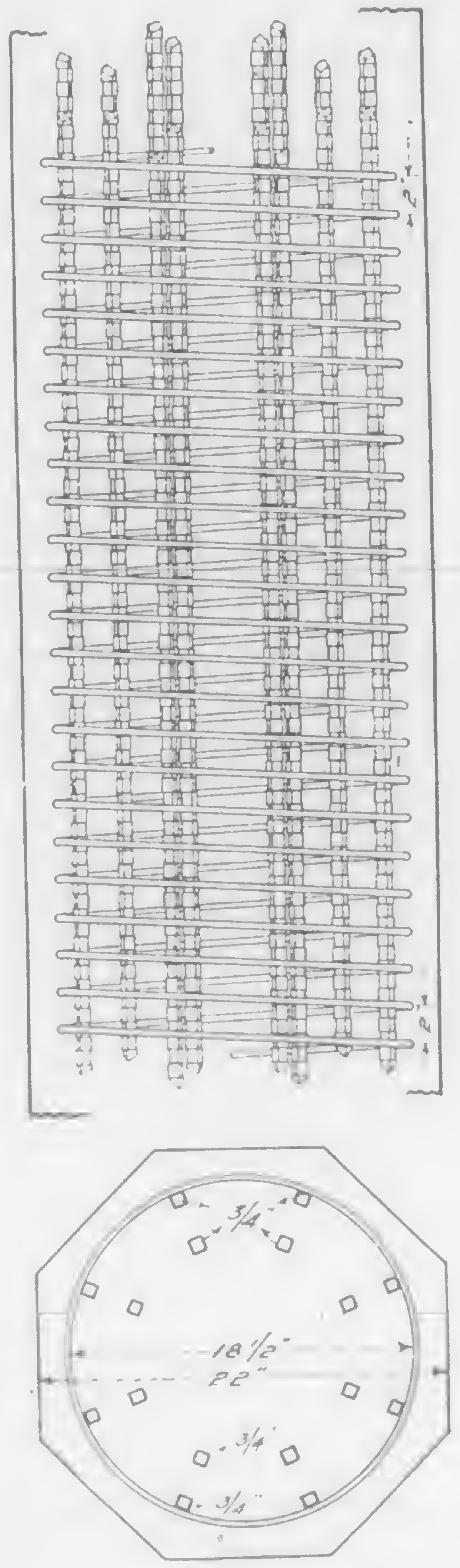

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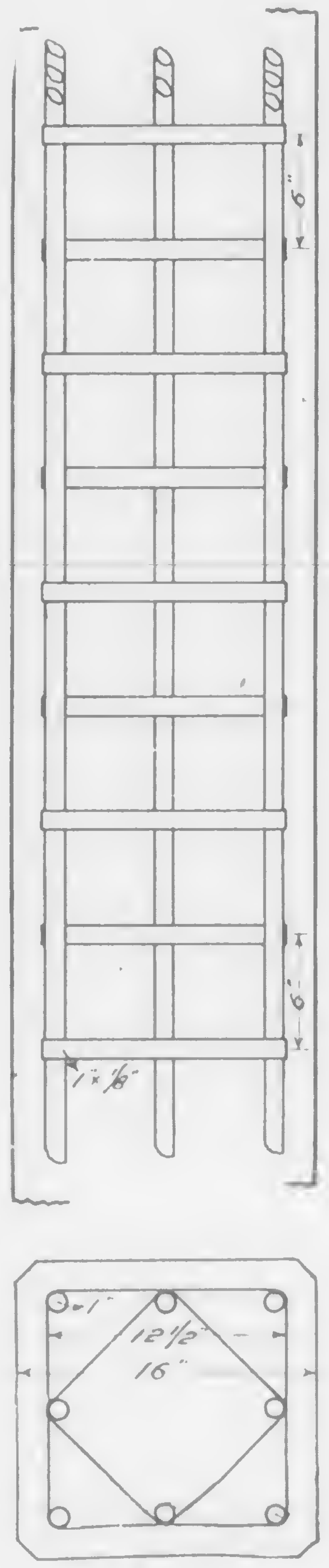

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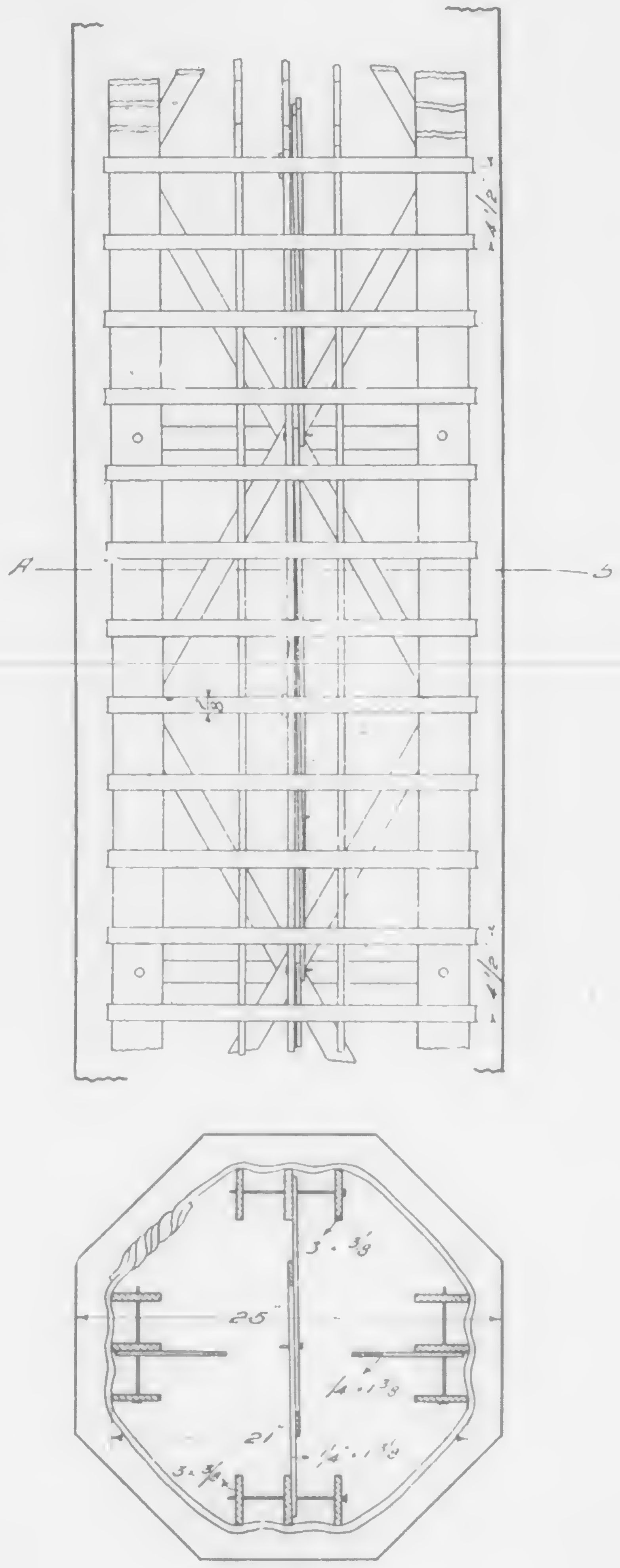
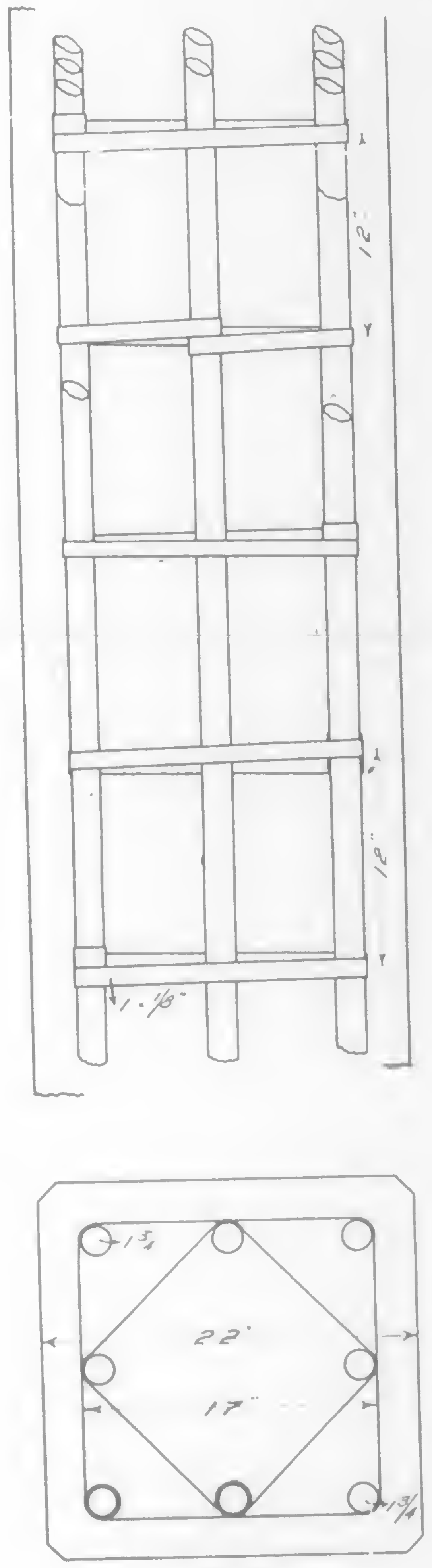


No. 12

justice or individual building harm is thus avoided. But I will very willingly identify each example for the information of those who may wish to look further into the matter. While it will develop that I lay bare in these articles, more specifically than yet done, some of the crudities and abuses of reinforced concrete building in San Francisco, it will be found that I do so in the interest of sound practice in that art, which many believe is being endangered by that which is unsound.

The situation is that a type of building, wholly unfamiliar to almost every practitioner of building design and of building construction in San Francisco, was shown by the great earthquake and fire to have qualities specially desirable in structures here. Other architects and other builders came from elsewhere, claiming special knowledge of and wide experience in this new thing. With some of these new comers these claims were false. There was a whoop-up for the locally new idea. Quite a number of owners forthwith wanted reinforced concrete. The facts that buildings of the type are necessarily engineering constructions, that to design them for safety and at the same time for economy is a purely engineering function, that to build them well is distinctly an engineering art, and that intelligent faithfulness and not mere money-making "business", must ceaselessly watch over the whole, have been largely ignored. Moreover, we appear to have no safeguard whatever in municipal inspection and supervision of building, against the erection of almost anything which a designer or builder may choose to palm off on an owner as a well-planned reinforced concrete structure.



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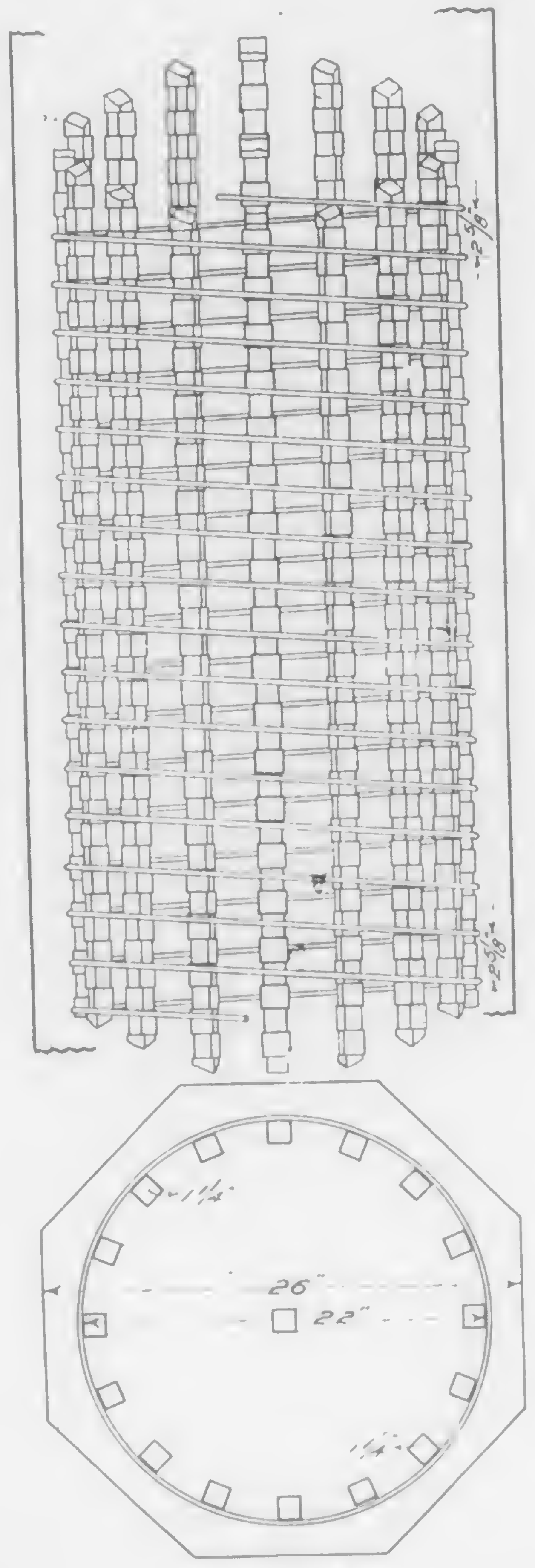

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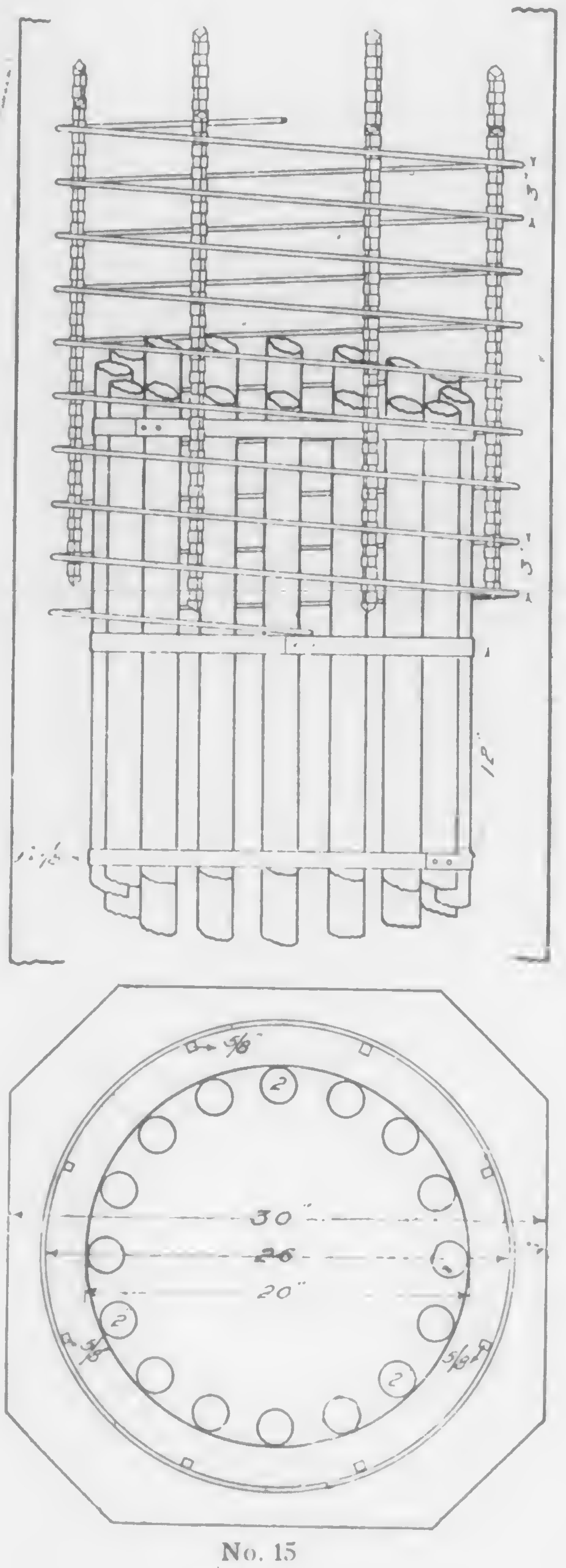

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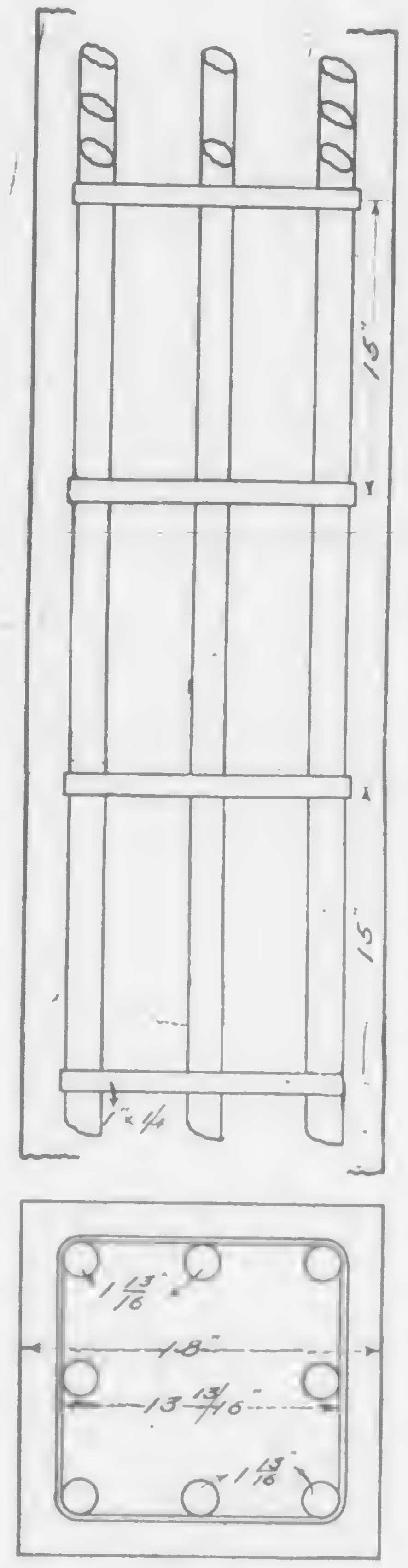
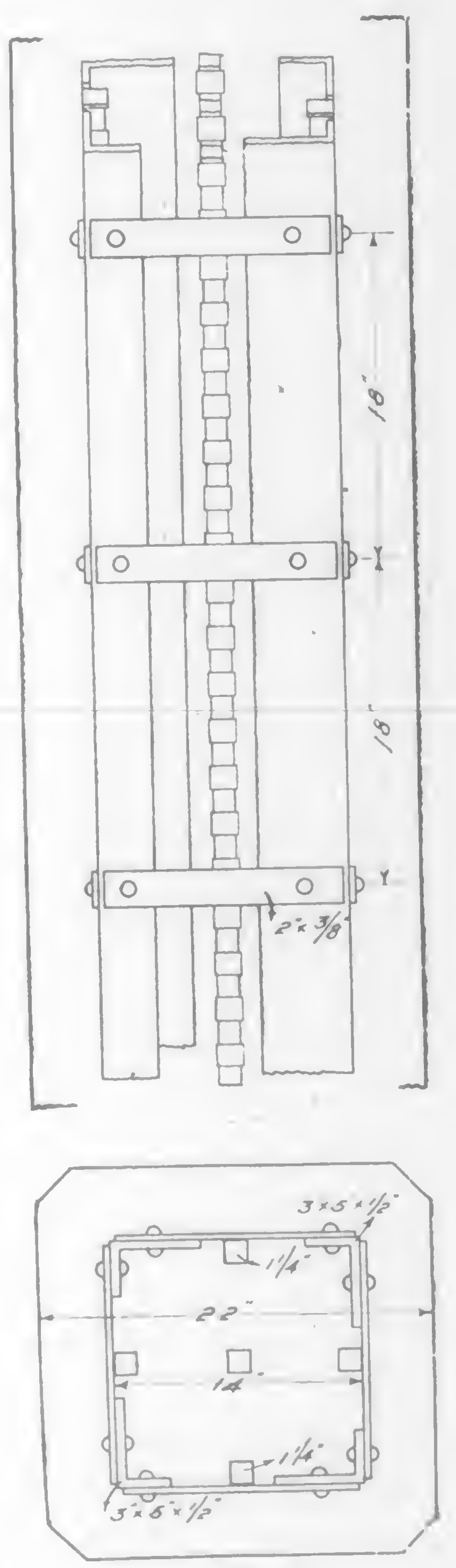


No. 16

And now we hear volumes of adverse small talk and large talk against reinforced concrete; and not the least interesting part of it all is that the small talk about all comes from large people and the large talk from small people, measured financially, as well as mentally, of course. There is necessity for helping the public towards a better understanding of this subject. It is unfortunate that any attempt to do so may be misinterpreted.



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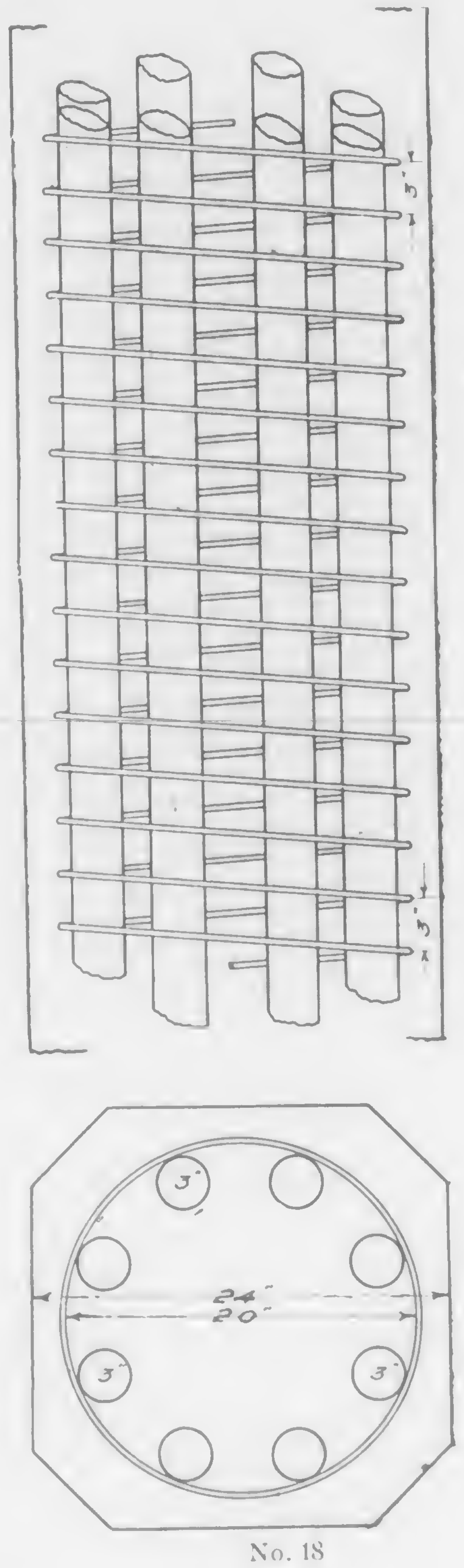

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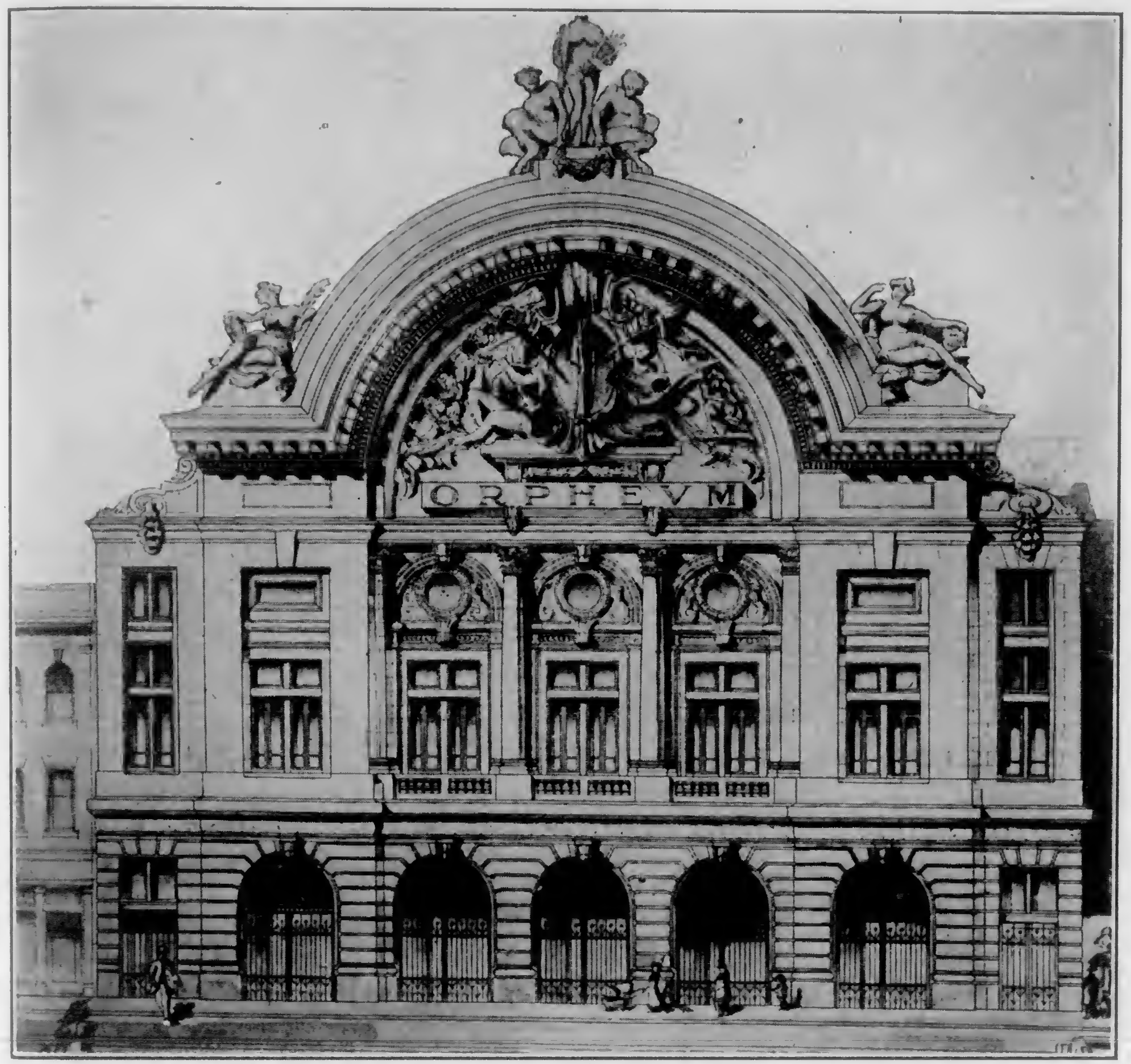
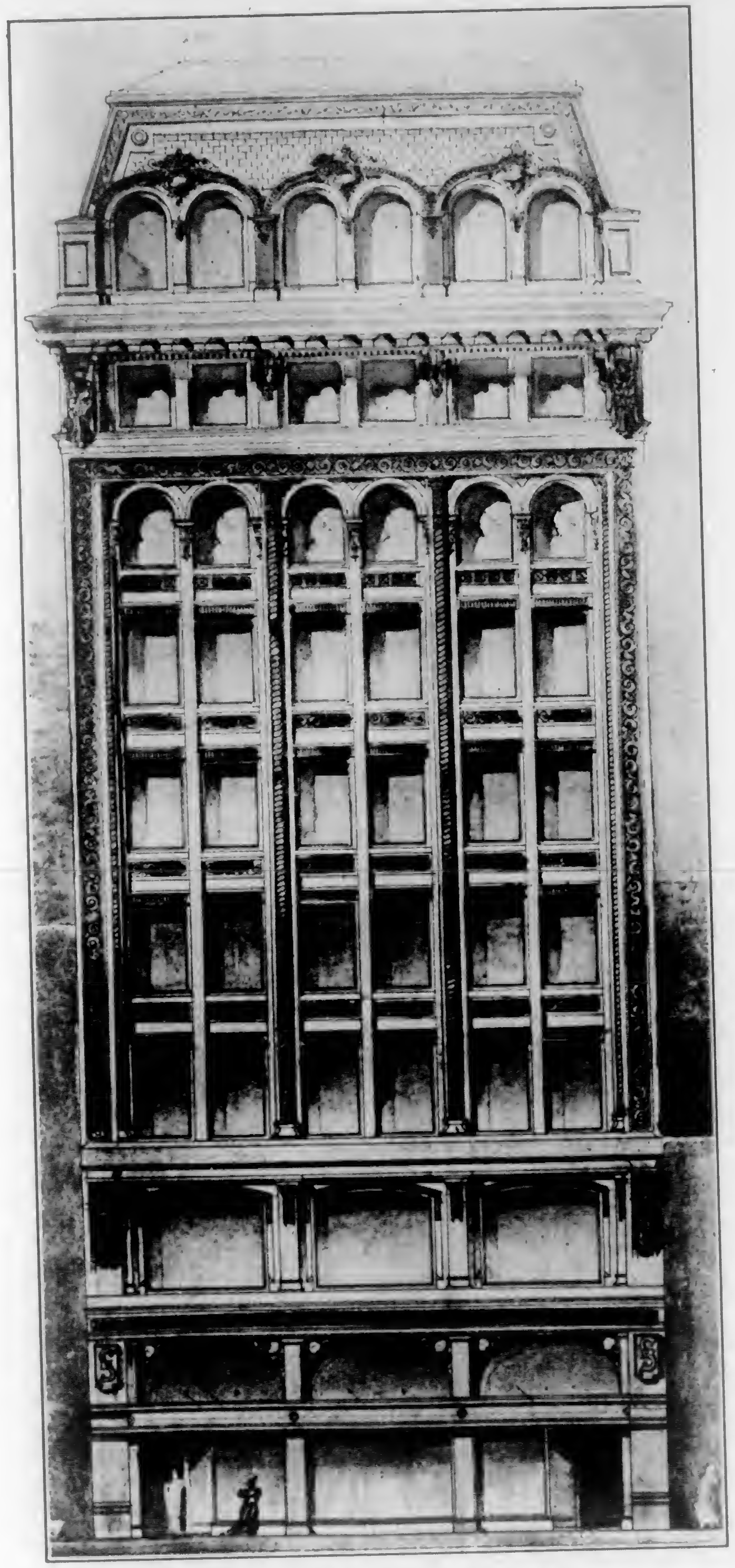


Design for Orpheum Theater, San Francisco
Lansburgh & Joseph, Architects

The Steel Frame and its Part in the Rebuilding of San Francisco

THE memorable and now historic April 18, 1906, may be said to have inaugurated a new and notable era in the building annals of the City of San Francisco. The cataclysm which marked that and the succeeding few days cannot, from the standpoint of the architect and the builder, be regarded as entirely in the light of a calamity unmixed with blessing for this and future generations. The fruits of the wonderful energy put forth during the past twelve months, must inevitably lead to the upbuilding of a city which shall in all respects conform to the highest ideals of modern American effort.

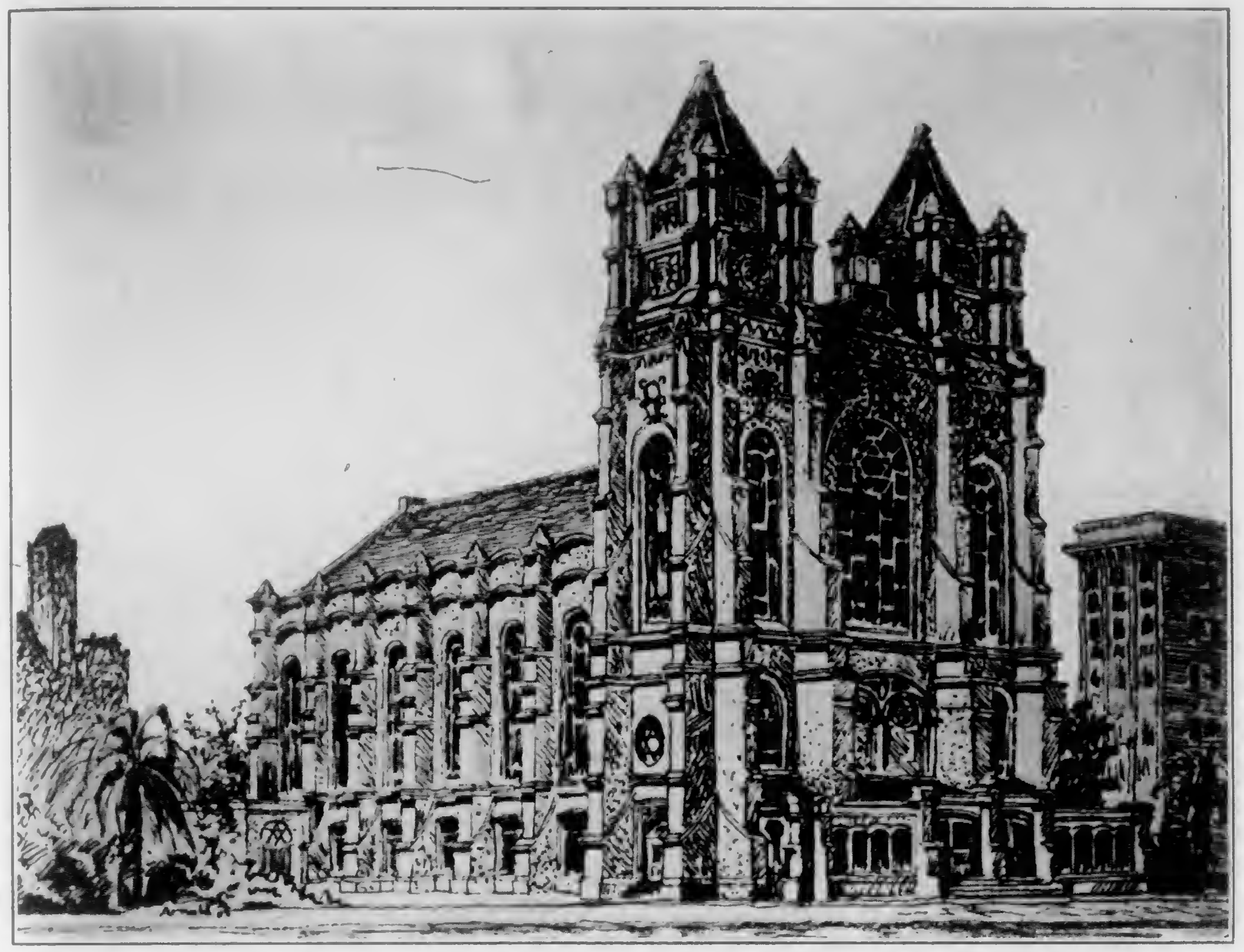
Granted that the great fire of a year ago wiped out ancient landmarks, hallowed by the consecration of time, and that structures of sentimental interest and association to the City of San Francisco are now no more, it should be understood that never again can buildings be erected which, whatever their interest from an historic point of view, would be a menace to the welfare of the community by reason of the flimsy character of the material composing them.



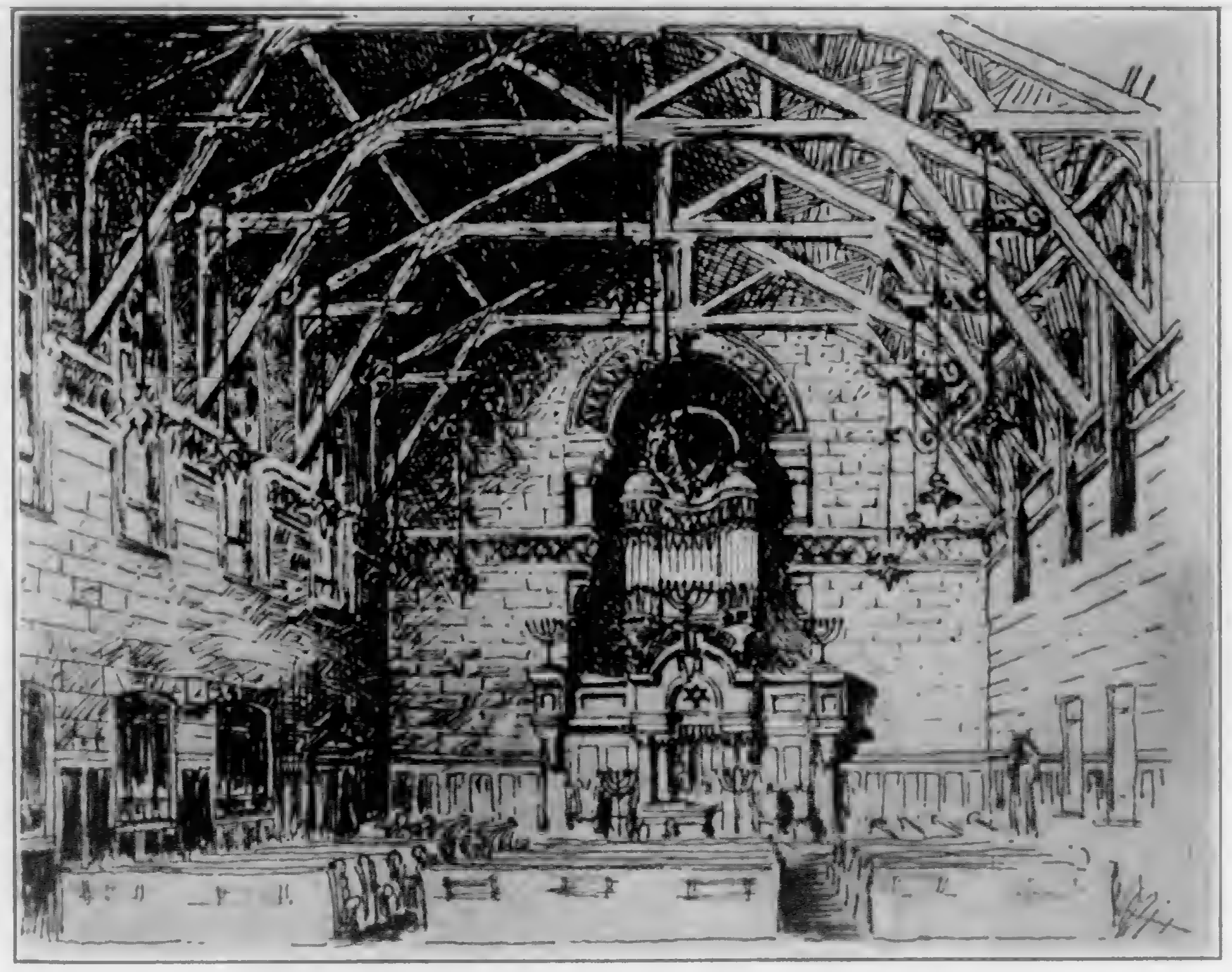
The Sanford Sachs Building, San Francisco

Equipped with Otis Elevators

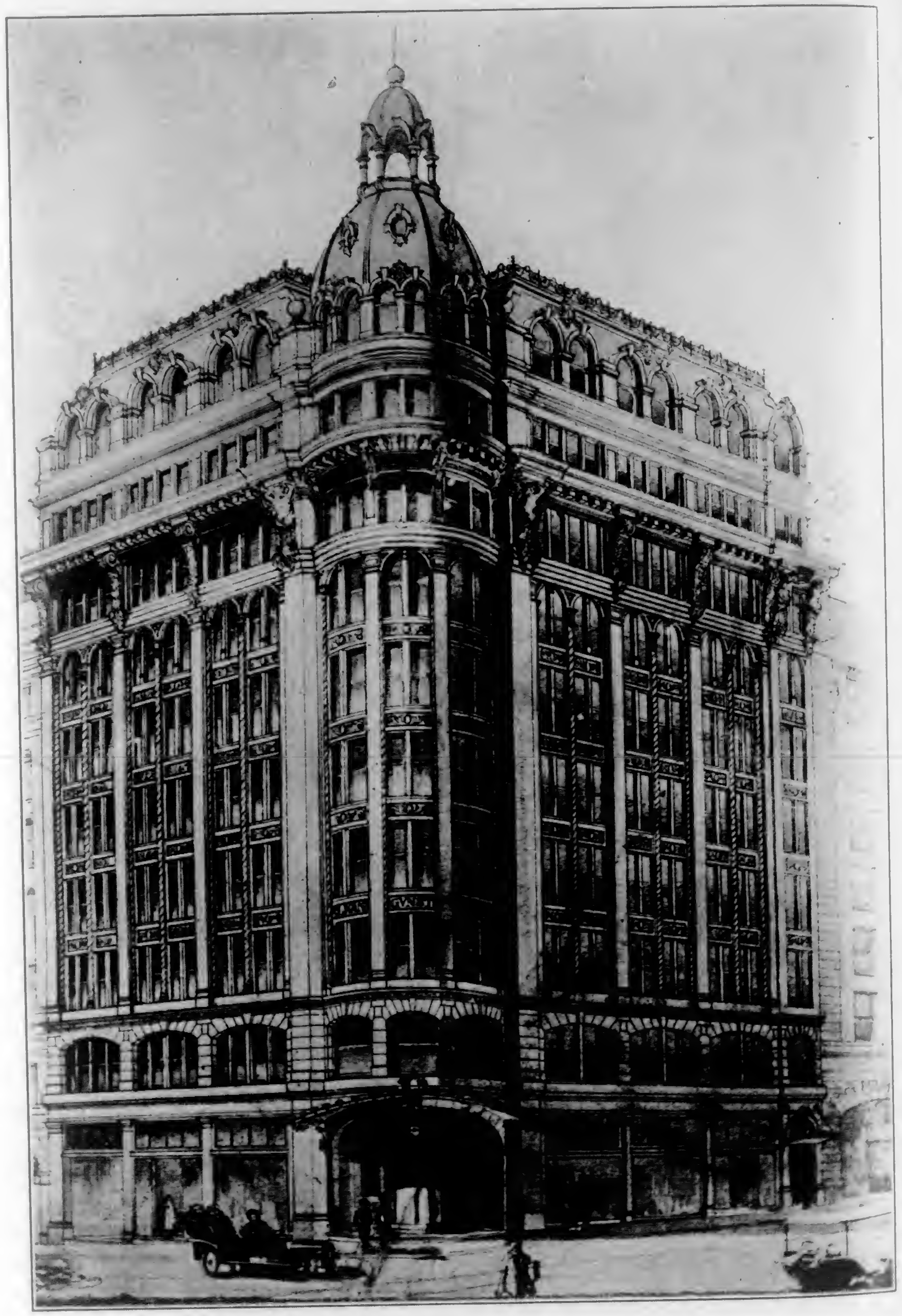
Lansburgh & Joseph, Architects



Design for Restoration of the Temple Emanu-El
Lansburgh & Joseph, Architects



Interior Temple Emanu-El
Lansburgh & Joseph, Architects



M. A. Gunst Building. Geary and Powell Streets. San Francisco

Equipped with Otis Elevators *Lansburgh & Joseph. Architects*

The lesson taught by the fire has not failed of study in this community, particularly that touching the merits of steel frame work in the construction of the modern office and public building. So it is that a vast field has been opened for this class of construction.

The steel frame withstood the earthquake and fire better than any other form of construction. The fact that reinforced concrete and good brickwork also bore up well under the stress of fire and shake has encouraged architects and owners to combine the three. Experts have declared that no better construction is possible than steel frames, concrete floors and walls and a facing of brick or tile.

Architects Lansburg and Joseph have designed a number of steel frame buildings for the new San Francisco and they are to be erected by the James Stewart Company of New York. This company is well known all over the country as contractors of some of the world's greatest buildings. Among the number might be mentioned the Savoy Hotel.

Among the notable steel frame buildings now in course of construction by the Stewart Company is the M. A. Gunst building, a ten-story office structure at the southwest corner of Third and Mission streets. It is to be a Class A building, thoroughly modern. The facade will be of sandstone, with the intermediary panels of bronze and glass. The character of the building will be somewhat French. It will cost $90,000.

Steel will likewise form the framework of the Sanford Sachs building on Geary street, between Stockton and Grant avenue. The front will be of semi-glazed polichrome terra cotta. The building will be ten stories high and equipped with every modern convenience for offices and salesrooms. It will have two facades, one on Geary street and one on Union Square avenue, thus affording abundance of light. This building will cost $175,000.

Both these buildings will have fast running elevators, and the grill work will be of elaborate design.

The new Orpheum will represent an expenditure of $400,000. A modern, safe and comfortable play house is to ornament the site of the old theater on O'Farrell street. Steel will again loom largely in the constructor's plans, which call for a handsome building in the French Renaissance style.

The southwest corner of Geary and Powell streets will likewise exhibit the possibilities of the steel frame. Here will be erected the Elkan-Cohn-Gunst building to cost $350,000. Class A and ten stories in height, this building will prove a source of legitimate pride to the architects, builders and owner.

The restoration of that familiar landmark on Sutter street—the Temple Emanu-El, has also been undertaken. This is to be a "rush job"—that is to say, time is the essence of the contract. The work, it is confidently anticipated, will be completed in ample time for the Jewish New Year in September.

* * *

Something New

"Anything new this morning?" said the engine dispatcher, as he leaned his back against the cylinder and steam chest for the purpose of warming his vertebral column. "Nothing," said the roundhouse foreman, "except that fresh paint you're leaning up against."—Automobile Magazine.

Recent Decisions Pertinent to Architecture and Building

AUTHORITY of Architect as Agent of Owner.—A building contract constituted the architect an arbitrator to pass upon the quality of the materials and the character of the work and to estimate the amount of work done as a basis of payment. The plaintiff had furnished materials to the contractor engaged in the construction, and in an action to enforce a mechanic's lien the owner defended upon the ground that payment had been made to the contractor. It is well established that, if the owner had knowledge that materials were being furnished by the plaintiff, payment to the contractor would be no defense. It was shown that the architect had such knowledge, and it was claimed that the same amounted to knowledge upon the part of the owner for the reason that the architect was the agent of the owner. It was held that, as the contract did not empower the architect or make it his duty to ascertain the source of materials furnished, such knowledge on his part did not bind the owner. It is elementary that the principal can be charged by the knowledge of his agent only when that knowledge is of matters pertaining to a transaction in which the agent has authority to act. Chicago Lumber & Coal Company vs. Garner, Supreme Court of Iowa, 109 N. W. Rep. 780.

Upon Whom Loss Falls when Building is Destroyed by Fire in the Course of Construction.—Under a building contract the owner agreed to pay to the builder the sum of $950 when the walls should have been erected to the second story, $1000 upon the completion of the roof and the balance in installments at certain stipulated times. After the building had been erected to the second story it was destroyed by fire, but the walls, valued at $500, were left standing. The builder declined to go on with the work, and in an action by the owner to recover the $950 which he had paid the question arose as to which of the parties should bear the loss caused by the fire. It was held that the builder was entitled to retain the payment which had been made on the theory that the contract for the construction of the building was not an entire contract, but a divisible one. That is to say, it was made up of a number of smaller contracts, the first contract being to raise the building to the second story. When the work was carried that far the builder had earned his first installment. If the contract price of a building is to be paid by installments on the completion of certain specified portions of the work, each installment becomes a debt due to the builder as the particular portion specified is completed. If the house is destroyed by accident the owner is bound to pay the installment then due, but he is not liable for anything upon an unfinished installment of the work. Where, however, the contract is for the completion of a building for a certain price, that is, where the contract is entire and indivisible, if the structure is accidentally destroyed before completion, and the builder, being given the opportunity, refuses to proceed further, he must refund any money which may have been paid him under the contract and is liable for damages for his breach of contract. The fact that payment is to be made in installments does not change the matter if the price is entire for a completed building, and the installments are arbitrary as to time of payment and fixed without regard to the value of any distinctive portion of the work done. Keel vs. East Carolina Stone & Construction Company, Supreme Court of North Carolina, 55 S. E. Rep. 826.

Right to Deposit Building Material in Street.—Persons owning property abutting upon public streets have the right to deposit material in the street necessary for the construction or repair of a building. The law justifies such obstructions of a partial and temporary character from the necessity of the case. But the obstruction must not be unduly prolonged and the exercise of the right to deposit the material must not unnecessarily interfere with the right of the public to use the street or with the reasonable enjoyment of adjoining property by the owners. Where a person placed a large pile of brick in front of his premises, extending about thirty feet into the street, and allowed the obstruction to remain there for five or six months, he was held liable in damages to an adjacent store owner upon its being shown that as a consequence of the obstruction water accumulated in front of the store and practically destroyed its trade. Culvertson vs. Alexander, Supreme Court of Oklahoma, 87 Pac. Rep. 863.

Effect of not following Specifications of Building Contract Upon Right to Enforce Mechanic's Lien.—The specifications which formed part of an agreement to erect a dwelling house provided that the house should be set on "5-inch piles set 4 feet in ground." The piles were not so placed, but were set upon flat stones, the contractor testifying that he considered it "better with the flat stones." The specifications required "hip rafters, 2 inches by 10 inches," but no hip rafters were put in. The first story beams were to have been 2 inches by 10 inches, but beams 2 inches by 9 inches were used instead, because it was discovered that "they were strong enough," and there were numerous other minor variations from the plans which the contractor excused on various grounds. In an action to foreclose a mechanic's lien filed by the contractor it was held that he had not shown a substantial performance of his contract such as is essential to the right to recover. A contract is not substantially performed by substituting for that which is expressly required materials, methods or workmanship which, in the opinion of the contractor and his experts, are "just as good," unless the substitution relates to a matter of minor importance, is made in good faith and for sufficient reasons, and an adequate allowance is made for the difference. It is not sufficient for the contractor to build a house; he must build the house contracted for, and substantially comply with the specifications before he is entitled to payment. Easthampton Lumber & Coal Company vs. Worthington, Court of Appeals of New York, 79 N. E. Rep. 323.

The A. A. Louderback Building at Eddy and Leavenworth Streets. San Francisco
Meyer and O'Brien. Architects

Stained Glass Window for a Memorial Vault, Stockton
Designed and Made by the San Francisco Art Glass Company

Cement and Concrete

The Commercial Value of Artistic Concrete

By LOUIS H. GIBSON, Architect, in Municipal Engineering.

THE friends of the cement block are greatly pleased with the plan of the Association of American Cement Manufacturers to develop an artistic interest in cement block design. This they are doing by offering substantial prizes for designs for various kinds of small houses. There are eighteen prizes, ranging from $200 to $40. There are six classes, the two highest being $200 and each of two of the others being graded down to $40.

The program for this competition has been scattered broadcast among architects and architectural draftsmen, has been published in various architectural and engineering papers. The program was carefully prepared and will be fairly judged under the rules governing such competitions. The prizes are of sufficient value and the prestige which would result from their winning of sufficient interest to develop a sincere and active interest upon the part of a large number of architectural designers of the country. These designs will be published and be spread before all of the architects, engineers and builders of America and other English speaking nations.

It is hardly possible to anticipate the advantage which will result from this intelligent and well conceived plan upon the part of the Association of American Portland Cement Manufacturers. It will inure, not only to their benefit and to the benefit generally of cement workers all over the world, but to the manufacturers of blocking-machinery, the makers of cement blocks, as well as to the public at large.

After all it is from the public that the greatest benefit will be derived. The public buy the blocks, the manufacturer makes them; he in turn patronizes the manufacturer of the machine, and altogether this involves the use of cement. The effort on the part of the cement manufacturers, is worthy and it will develop splendid results commercially, because it will show what can be done artistically.

It can not be denied that the cement block industry has been a relative failure, largely on account of the inartistic handling of the material. There are other causes, but no matter if the cement blocks and all of them had been structurally ideal and made mechanically perfect, it yet would have been a relative failure, because of the inartistic character of the blocks and because of inartistic handling.

This competition in its results will attract the attention of architectural artists from all directions; it will be participated in by men of splendid training and adequate experience, and there will be laid before

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This competition in its results will attract the attention of architectural artists from all directions; it will be participated in by men of splendid training and adequate experience, and there will be laid before the world splendid documents which will shame previous efforts in cement block design and execution. Those who have been familiar with the cement block industry from its incipiency have predicted just what has happened—that is, without the touch of the artist that the business would go down. Many of us saw in the beginning that the work of making cement blocks was in bad hands, so far as the credit of that industry was concerned. Cement workers have been warned as to the position in which they were placing themselves, but in a large measure the suggestions have been disregarded. Under this new movement, however, there will be presented an object lesson of such a pronounced and startling character that there can be no escape from its teachings.

In the program for this competition the limit of cost ranges from $2,000 to $4,500 per house, and it will be found that there is no excuse for ugliness in a house of any sort. If any part of one of these structures can be made beautiful, all parts may be beautiful; there is no excuse for an ugly detail. The beautiful trimming of a window, a doorway, the pleasing form a string course, a well-proportioned and well-formed cornice need cost no more than the ugly form. The beautiful form involves no more of material and no more of labor in its fabrication than does a crude and ugly and common form. This relates to detail—the door, the window, the string course and other parts. Good proportion costs no more than bad proportion; good composition and arrangement of parts costs no more than a faulty, crude and common arrangement. A beautiful house need cost no more than an ugly house. In truth, there is no excuse for an ugly thing in this world. The beautiful thing is the thing in place.

By way of illustration it may be said that few of us appreciate the improvement that has been wrought in the manufacture of brick. This is not alone through the reduction of the cost or in the improvement of the ordinary form, but as well in the production of the artistic form. While most molded brick which were made a few years ago were uninteresting and often ugly, there are now those made which are truly beautiful and artistic. There is absolutely no reason why concrete forms may not be made which are as beautiful as anything that the world has ever known in architectural design. There is no reason why this should not be true: there is every reason why it has not been true. The design for cement blocks of an artistic character has not been furnished by the manufacturer. The public and the architect have asked for, have sought earnestly and eagerly good designs, and have nearly always met with discouragement. Certainly the result has been such at to drive the best builders away from the consideration of this building medium.

The example of brick manufacture was cited above. There is a certain analogy between brick design and cement block design, with the inherent advantage in favor of the cement. Because of the size of the forms and the manner in which the blocks are handled and cured, the cement block manufacturer has a more pliable medium in his hands. The larger form of the block certainly presents great advantages. Nevertheless we have beautiful designs in brick and in their decorative forms all over this country, and it is rare indeed that we can point to the beautiful buildings where cement blocks have been used: certainly few important structures in this country.

The brick-maker has in a measure blazed the trail for the cement block maker. In the early history of decorative brick-making there was somewhat of prejudice against the use of machinery in the production of things artistic. It was affirmed and believed that the artistic which was in mind could only find adequate expression through the intervention of the tool which was in hand. Certain kinds of structural work and certain details of carving will always have to be done by hand, yet it is true that many decorative details and forms can be produced and reproduced as well through the agency of the machine as through the agency of the hand. It is the artistic impluse of the mind, guiding the hand, which produces the result. Why may it not be true that the same artistic impulse and the same mind which guided the hand may also design and guide the work of the machine. The form which the machine produces may be designed by a great artist. A great artist may model and execute the original design. This may be used in the formation of the matrix through which his artistic design may be produced and reproduced in concrete by the hundred, the thousand or more. Some years ago a Boston manufacturer of molded brick employed Mr. Evans, a distinguished sculptor of architectural decoration, to design for his firm certain forms to be molded in brick. Mr. Evans had formerly been doing a great deal of work for H. H. Richardson, the architect; he did the carving on what was then the New Brattle Street Church in Boston, the Trinity Church. He did much work on the City Hall in Albany and on the New York State Capitol, and elswhere where Mr. Richardson was engaged as the architect. Through the medium of Mr. Evans, the artist, the first artistic molded brickwork was done in this country, and being artistic it added large value to the raw material, the clay, and was a great commercial success. Through the medium of Mr. Evans' art and the inventive, mechanical and business ability of the manufacturers a great and successful business was built up. It is very probable that had Mr. Evans gone into the brick business he would not have made a commercial success of it, and it is equally certain that had these manufacturers depended upon their own artistic impulse or capacity to design the beautiful forms, they would have failed in this part of their undertaking, and in so far as their success was dependent upon the public demand for the beautiful, they too would have failed. Through one medium or another the manufacturers of ornamental brick have pursued a similar course, and the measure of their success has been very largely determined by the quality of the artist. There had to be a business ability, but no amount of understanding or commercial energy will take the place of or supplant the weakness of inferior designs; both are necessary. Mr. Evans was responsible for the work of the machine, in so far as the machine produced an artistic result. The machine produced an expression of the individuality of Mr. Evans.

It would be difficult to justly estimate the commercial value of Mr. Evans' art to manufacturers of this product. It has absolutely enlivened all the capital invested in their business for these many years. It has made a live profitable asset out of what might have been a dead one.

We must not discount the art of the machine. In a measure every bit of bronze sculptural work is dependent upon a mechanical process. It is a machine product. To be sure there is the design of the artist, but the final realization of his design, its final expression in material, is dependent upon a mechanical process. He designs a bit of statuary, he models it, he expresses the best there is in him through the medium of the clay; and from the model a mold is made and the figure is cast. The making of the mold and the casting of the figure are in principle no more or no less mechanical than the making of the mold for the brick which are decorative, and it is no more or no less mechanical in either case, whether there is one brick or one statue or a thousand. The last one of a hundred thousand of brick or statuary is dependent only on the original impluse of the artist and the mechanical perfection of the operation. This illustration is given at this length for the purpose of inducing greater respect than many of us have for a mechanical process as related to things artistic. No artist could personally execute all of his work on a building. Mr. Evans probably had men working for him, handling the chisel and the hammer, when he was decorating Mr. Richardson's buildings, who had little, if any, more artistic impulse than the machine which made the brick.

The concrete block makers of America have been undertaking to fly commercially with one wing. Many of them are possessed with the business instinct, certainly with a business ambition, though one can recall instances where even the business wing was shy on prominent feathers or badly clipped. The concrete block industry must have two wings in order to fly; there must be the wing of the artist and the wing of the business; it makes no difference which one is short, either deficiency will cause failure.

The concrete block maker has proved his own deficiency. He has been trying to fly on one wing long enough. He has his hands full in developing the wing of mere business. This involves primarily mechanical excellence. He certainly must have assured himself by this time that in order to sell his product it must be well made from the manufacturer's point of view. The artistic point of view may be never so strong, nor so nicely developed, but that is dependent upon the other for successful venture before the public. The artist furnishes the design for the form; it is for the manufacturer to properly materialize the idea. There must be the surface, the texture and the color as related to the visible part of the product, and there must be the density and stability as related to the body of the block.

It unfortunately happens that the same quality of workmanship and the same intelligently expressed ideas of composition of the concrete itself, that will produce a solid and relatively impervious block, will in a large measure produce the pleasing surface and the artistic texture. An adequate handicraft is essential to the realization and materialization of the artistic impulse.

The great practical fault which one finds with the average concrete block is its pasty texture, owing to a superabundance of cement, and its dull, leaden color, owing not only to a superabundance of cement, but to the character and quantity of the aggregate, the inert material, which has so much to do with the texture of the surface. In a previous article this matter was treated at length, and it was stated that there was a normal concrete, a mixture which realized the full strength and efficiency of the combined materials. This article considered concrete from the structural point of view. It affirmed that it was first desirable to so compose the aggregate, by determining tests, that the voids would be reduced to a minimum, and then to add only so much cement as would surely fill the voids. This makes the strongest concrete, the best concrete structurally, and in so doing it presents the most beautiful surface that is possible with the materials involved. The beautiful texture may be secured by the same means that will produce the strongest substance. The ideal texture is that where the particles of aggregate are practically exposed, and where there is only a sufficiency of cement on the surface to cause the particles of the aggregate to adhere—simply this and nothing more.

Texture is one thing and color is another. A light colored surface, either a buff or gray, in any of its tones, can not be secured with muddy colored aggregate, or dark or leaden colored cements. Many cements are not suited to the production of the artistic block. Many of the cements on the market, however strong they may be, are absolutely deadening in their color influence. It is true that certain pigments may be used for the purpose of securing various colors, but they must always be for the color or tone darker than the cement itself. One may secure a lighter color effect by using a light aggregate, but with certain grades of cement there are certain deadening qualities in color influence which can not be eradicated. The best color effects which may be secured by the aid of pigments will begin with the lightest possible color of both cement and aggregate.

While we are hardly far enough advanced at this time in the manufacture of concrete blocks to consider very seriously or accurately the use of artificial coloring material, it may be well to know what can be done in this way. A few years ago the writer while in Havana, lived in a room where there was a beautiful concrete floor with a many-colored border running around the room, and a beautiful center-piece and figures disposed on the body of the floor. The design was artistic, the colors were clear, bright and sharply defined, and the workmanship was superb. Floors of this kind are by no means uncommon. The cement which one sees used in this section, and which was used under the Spanish rule, was very light in color, not to say white, but such as would produce a surface of about the same color and texture as light sand- or oolitic-stone. With this light cement the colors could be graded and at the same time preserve their sharpness of tone and quality. We all call to mind that ordinarily, when we undertake to color cement for a sidewalk, we invariably get a dull, heavy, leaden quality, owing to the color of the cement and the aggregate.

There has recently been placed on the market a cement which is all but white in color, though it is tinged by a warmth which, when combined with the ordinary clean, sharp sand, yields a color of about the same quality as that of the most sought-for light building stone. This cement, when combined with varying aggregates, will always give a rich tone, and when properly combined as to quantity will yield a splendid artistic texture. Not enough attention has been paid to the selection of cement for the production of artistic results in connection with cement block work. The base we will find must be a lighter colored cement and then the gradations of color or tone may be made through the aggregate or pigments. The sharpness, crispness or color and texture can only be properly maintained with a cement base of light color.

* * *

The Growth of Concrete Construction

IT HAS been the conviction of those who have noted the increasing use of cement in the past twelve months that the current year would witness a great advance in this direction, but present indications point to a much more extended application, especially in the form of concrete, than the most sanguine anticipated. From every section of the country come reports of building operations involving the use of concrete. The list includes practically every branch of construction. In many instances, brick walls or facings of brick and stone are specified, but in a majority of cases where large structures are planned, concrete is to be an important factor.

On the Pacific Coast, especially in California, the number of concrete buildings planned or under way is conspicuously large. In that locality, as in other sections of the country, concrete has made remarkable progress in popular favor in spite of failures here and there, the antagonism of trades unions and the opposition of influences concerned in the future of the materials with which concrete comes into direct competition.

Concrete foundations, cage construction, bridges and dams comprise an old story if considered from the standpoint of extended use instead of time, but from its application in these and kindred projects there has been remarkable expansion. A matter worthy of special note is the fact that there is now general recognition of the value of concrete for every type of building in which the contents or manufacturing processes may have to do with sanitary considerations and the life of the structure. That is to say, buildings in which meats, fruits and other foods are prepared or stored, or in which chemicals are used. In all structures of this character, concrete is regarded as an economical and sanitary substitute for materials subject to rust and decay.

In the way of more recent uses of concrete may be mentioned the railroad tie, telegraph and telephone poles, flooring in steel cars, mine supports, shingles, doors, window sash and fencing. The list extends from the ordinary to the most novel applications, such as the stoppage of leaks in vessels and the filling of trunks of decaying trees. In many operations where mechanical devices or human hands could not work with other materials, cement and concrete have solved vexing engineering problems and saved the day in important enterprises. In brief, if we were to put aside every type of concrete construction now the subject of controversy and consider only that which time and experience have demonstrated to be absolutely practical and economical, the volume would still be enormous.—Cement Age.

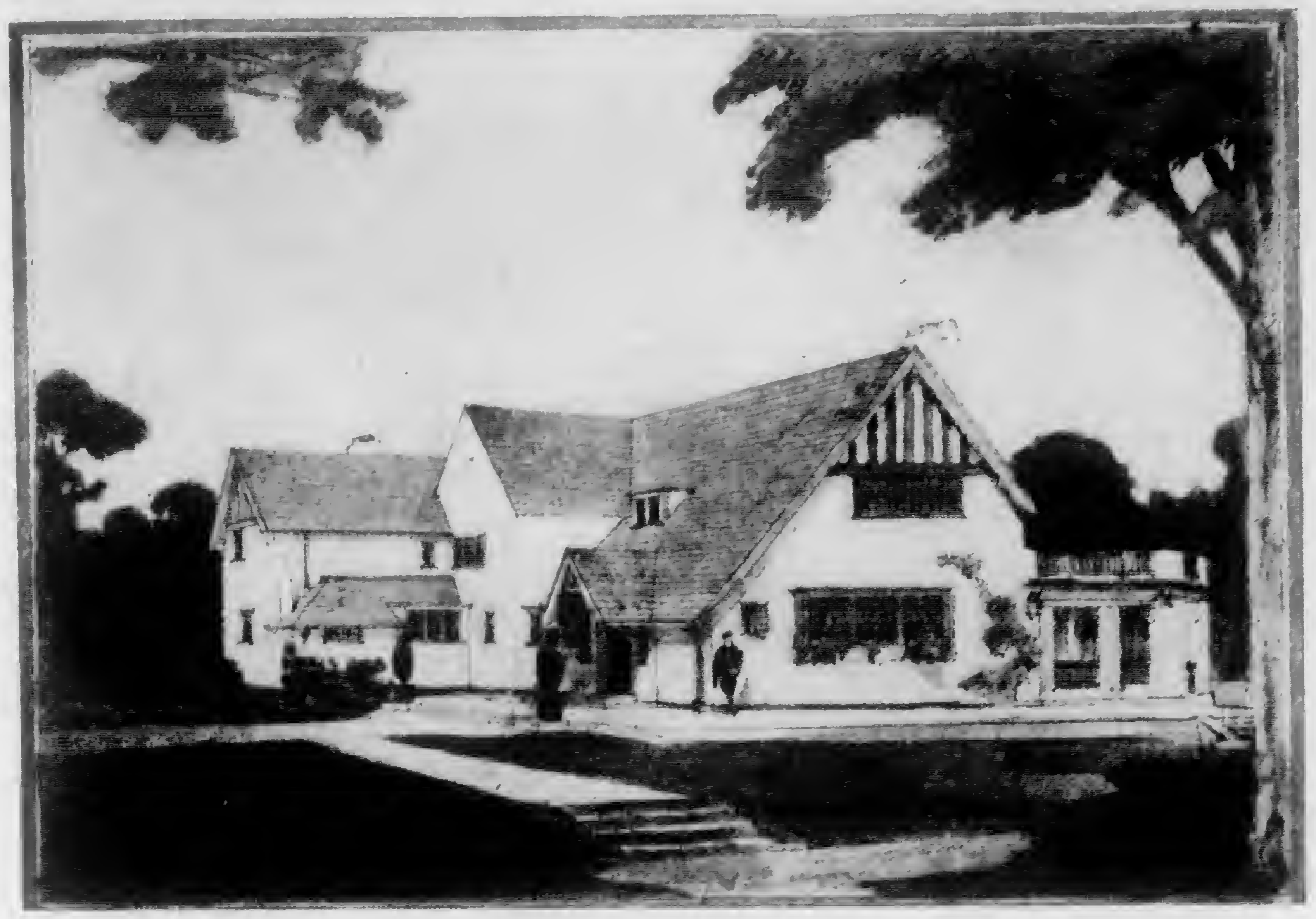
* * *

Better Fire-Prevention

AN INTERESTING change in the policy of the big monthly publications is most noticeable. Where most of the space was formerly given to fiction and travel a great proportion today is used in the discussion of lively and timely topics, and those journals are fast becoming real molders of public opinion and a potent power in the reform of abuses, popular follies, etc.

Advance sheets of the Metropolitan Magazine for May illustrate that point most thoroughly. One of the leading articles, instead of being romance or a story of conquest, is a most able paper on "Fire-prevention", something about which, judging from our terrific fires, our people are in sore need of instruction. The editor prefaces this article by saying: "In the matter of fire losses we lead the world. The question naturally arises: Are our great losses due to careless preventive measures? Have you ever seen your office or your home with your treasured possessions totally destroyed by flames? Do you want such an experience? Perhaps you think you are careful. The maximum cost of fire destruction in all European countries is less than one-sixth as much as in our own country. This article, by an expert, discusses the situation and suggests the common sense preventives."

The article is by Architect F. W. Fitzpatrick, of Washington, the Executive Officer of an international society having for its members the Building Inspectors of the world. He is well known to readers of this magazine, having contributed a number of timely articles on fireproof construction.



Design for a Concrete Residence. Squires & Wynkoop, Architects

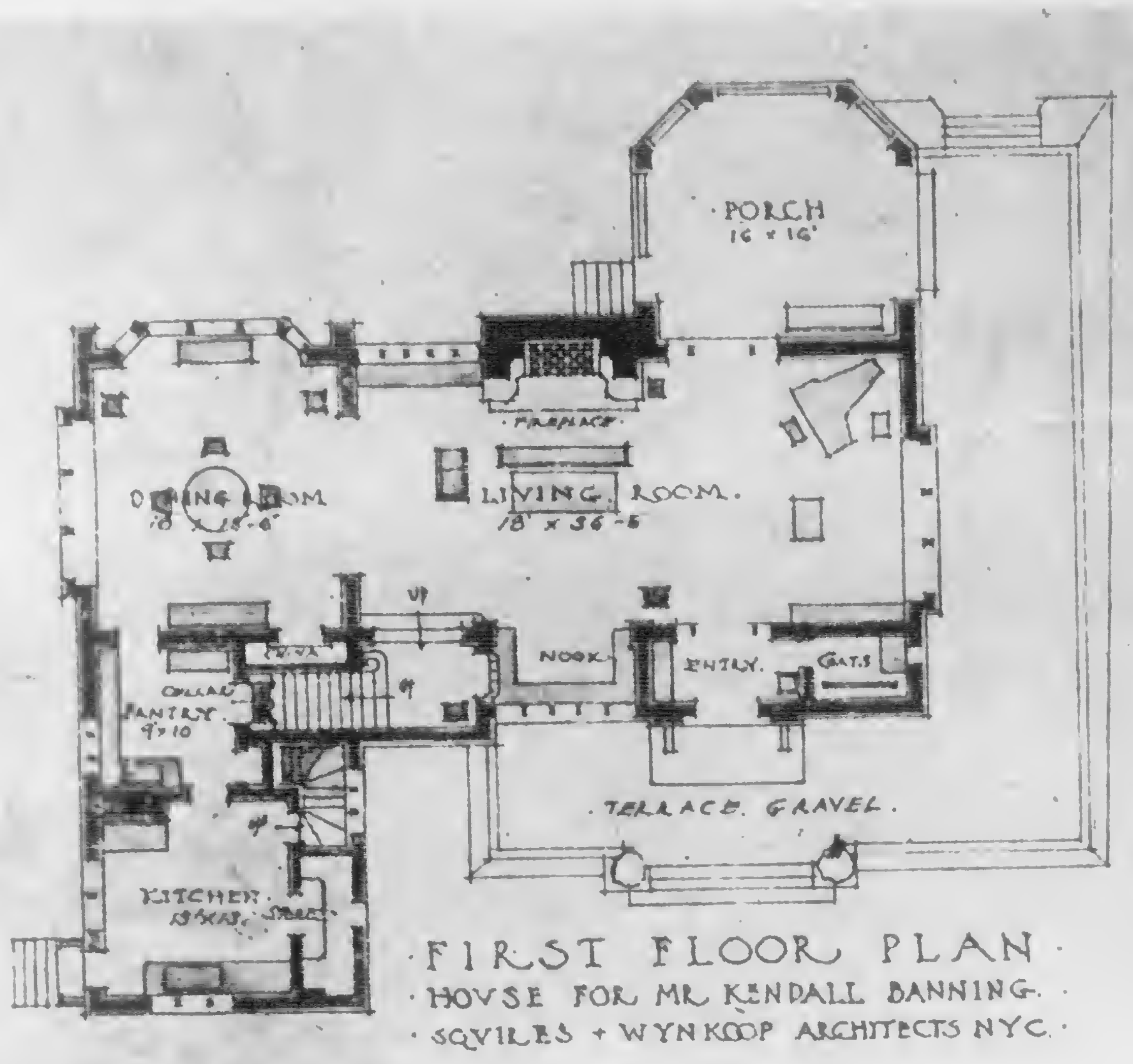
The Use of Concrete for Cottage Building

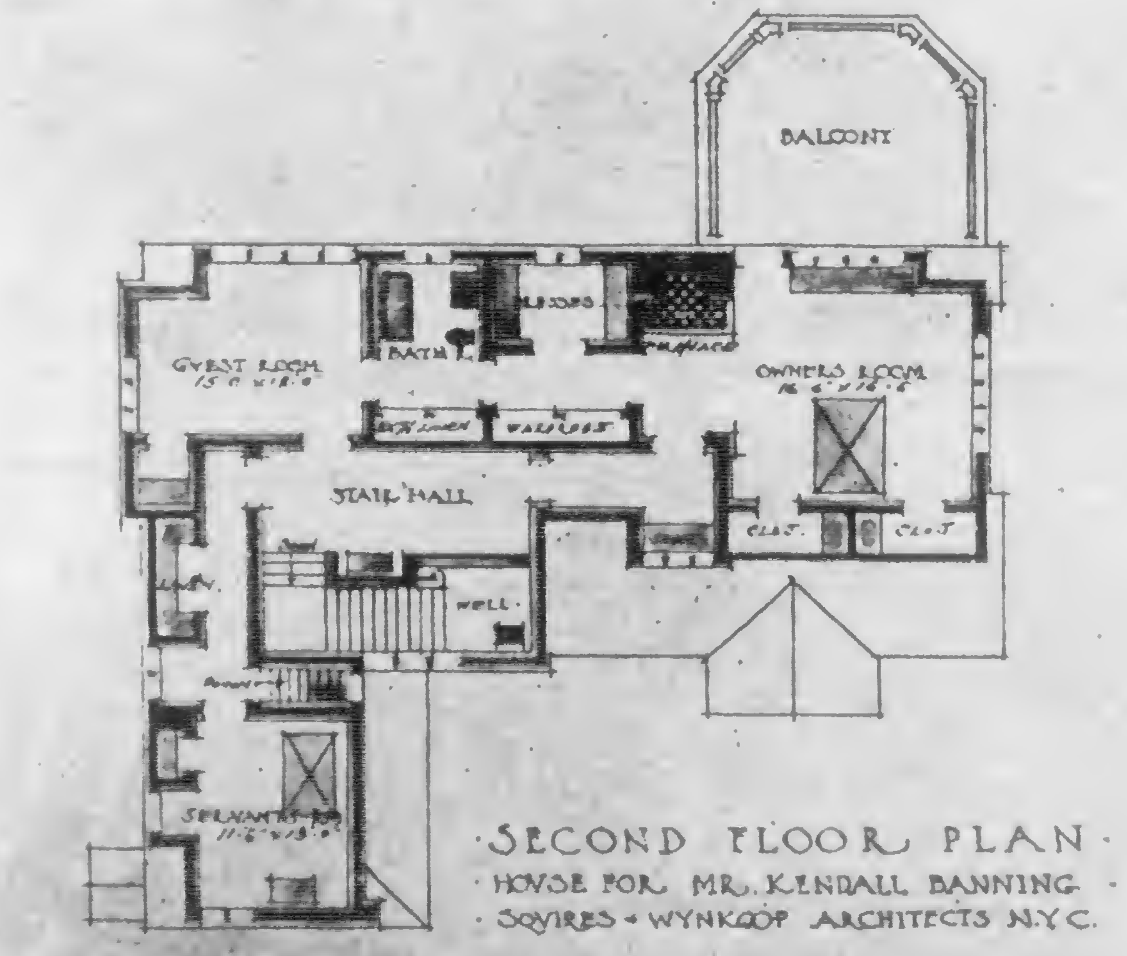
The Right and Wrong Principles in the Design and Construction of Concrete for Residence Construction.

By DAVID L. LAY

BACK of beauty is the cry against concrete houses today. Whatever truth there is in such accusation is the fault rather of the users than the material. Concrete first recommended itself on account of its utility. This side has been pushed in many instances to the neglect of its artistic possibilities. Apart from its commercial side, the use of concrete has been largely confined to small houses and those where the tastes of the owners have not called into play serious architectural effort. The result has been that many of those who have designed in it have been untrained and inexperienced. They have produced only some very crude buildings but have fallen into the usual error of the tyro—that of imitation in concrete of other materials. This accounts for many crudities in appearance and has led to the most common fault of the unimaginative, that is, imitation of the effects of other materials.

The true artist designs in a way characteristic of the natural material which is under his hand. He tries to make his building tell the truth. Strange as it may seem, by so doing he accomplishes the most beautiful results. Art is long and an imitation cannot stand the test of time. The designer who imitates a Gothic stone building in wood or a stone cornice in metal, sanded and marked off with false stone joints, would accomplish something more worthy of his calling if he expended the same amount of ingenuity in trying to produce a wooden design that looked like nothing but wood or a metal cornice that was characteristically metal. He would also stand a better chance of doing something artistic.





Concrete has come to stay. It has to be reckoned with in design as well as construction. It requires then a concrete architecture characteristically its own. It needs an art of concrete. We have tried to show that to be artistic it must be truthful and this precludes imitation. The nature of concrete leads to its use in large flat wall spaces. That such may be treated artistically has been proved by the stucco work in the half timbered houses of England and Normandy and more strikingly in the old palaces and churches of Spain, and in the missions of Mexico and California which they have inspired. They teach many interesting lessons in mass and color treatment, yet concrete should not copy them because they are stucco and adobe. Concrete is a finer and more structural material.

The illustration shows a step in the right direction. It is a characteristic concrete house, yet it is evident that it was studied with the idea of attaining a beautiful result. Nothing is imitated. The elevation is a truthful expression of the plan. Both have been studied with the idea of concrete in mind. The result is broad wall surfaces and a few simple openings. The gables are interesting in outline, especially the largest one, and the whole mass is picturesque.

The soberness of the masonry both in design and color places the lively and brilliant roofs in contrast. The decorative spots made by the wood work are happily chosen, especially the quaint little hooded entrance at the end of the long roof line. One can imagine bright flowers in the windows and along the terrace.

The little house has used the material honestly, it has taken advantage of the possibilities, while it has never tried to overstep its limitations and in every point has made a quiet effort after taste and charm. It marks a step forward in art in concrete.—Cement Age.

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Concrete Failures

By THOMAS POTTER, in the Builders' Journal and Architectural Engineer

CONCRETE work, like most other building processes, is subject to failure when composed of unsuitable materials, dealt with under improper conditions, or executed by incapable workmen, under inexperienced surveillance, and when any or all of these occur the cause is not very difficult to trace.

Many failures are not of a serious nature; they attract little attention, and are known only to those immediately concerned; others of greater magnitude we probably hear nothing about; it is against the interest of all employed or interested therein to make such matters public if they can be avoided, as in the case of the serious ceiling and floor failures lately at the Bexley Heath Asylum, which occurred after having been completed five years, the cause of which is unknown to the general public.

It is only when a coroner's inquest becomes necessary that the circumstances connected with concrete floor, roof, and other failures, are made known through the press that we learn particulars that can throw light upon the cause and the result, as in the case of the Orchard street accident in 1898, when seven workmen lost their lives through the collapse of concrete roofs and floors. Even where there is evidence of failures that can apparently be easily remedied, it may happen that the remedies are not of a permanent character, as, for instance, when they arise from the use of an inferior or unseasoned cement, no care having been bestowed as to its soundness and fitness for the purpose, the results arising from the chemical action of the constituents of which Portland cement is made are undetermined for two years at least after its use, and in some cases probably much longer.

In the choice of an aggregate for concrete there is usually but little scope; local facilities usually govern the selection, but, as before explained, there are certain conditions to be guarded against which otherwise may lead to failure, as, for instance, sulphur in unaerated slag from iron ore, and in cinders from certain chemical works, half burned limestone, chippings, accidentally mixed with locomotive ashes, unslaked lime core refuse from plasterers' mortar, and other materials which will expand when water is added to them, the remedy for which is careful examination, and, if possible, exposure to the atmosphere and rain for as long as circumstances permit. Where water is abundant the aggregate should be well saturated, which will help to slake any portions that may be inclined to swell, or that have escaped observation. It is a difficult matter to judge by appearance exactly the nature of aggregates, and for town buildings where no room for storing exists, but where delivery has to be day by day, it has in a large measure to be taken on trust.

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The primary cause of most concrete failures is the nature of the matrix—now almost invariably Portland cement—and unfortunately the latter is one of the few building materials that cannot be judged to any extent by the most skilled expert from a cursory examination. Color and weight were formerly held to be two features from which its character might approximately be estimated, but these are quite uncertain factors at the present time; fineness can be more readily ascertained, but this is insufficient evidence of quality; a bad cement can be ground as fine as a good one. Unfortunately, too, a fair estimate of its strength and quality can only be arrived at when tested after an interval of at least seven days, and, better still, fourteen or twenty-one days as being more reliable.

In large towns, where users of cement are unable for want of storage room, to stock any quantity, and where it is often required miles distant from their works, there is a saving of cost in cartage and unloading and reloading in having it direct from the manufacturers, or from one or other of their depots or agents, and as the available space on new buildings is usually too restricted to store any quantity to season, it is frequently the case that cement is used immediately after or within a very limited period of its delivery.

It would seem possible to have ties so made as to render it a difficult matter to tamper with the contents of the sacks without detection, as, for instance, ties with a colored thread interwoven therewith, as is practiced—for identification—with government rope. Some manufacturers now seal the ties, but something more simple seems desirable. Builders' merchants' clerks and storekeepers are often credited with "ringing the changes" when a certain brand of cement is inquired for and is not in stock, presumably in the interest of their employers, who possibly are unaware of what has been done. On one occasion, noticing a plasterer cementing the outside of a house, I inquired whose cement he was using, and he replied A's, but he added, "I have had some delivered this morning in A's sacks which I feel sure is not A's cement." When the building was finished the tint of some portions was very different to others, to the plasterer's disgust.

Another difficulty with the use of cement may lead to failure is that some manufacturers profess to make several qualities. This is a reprehensible custom. Wherever cement is used, and for whatever object, it is for some purpose where lime mortar is assumed to be not good enough, and upon the use of which great reliance has to be placed; the object is clear to everyone; cutting contracts necessitate cheap materials; one firm of manufacturers, and possibly others, state in their trade lists that they supply three qualities of cement—"first second and contractors' " qualities. The latter description is a libel on contractors who purchase the best.

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Now that Portland cement is largely employed all over the country, and is usually received from the manufacturers, their agents, or builders' merchants in small quantities at a time, it is impossible for the user to test, or have tested, each consignment as delivered. It would be interesting to learn how many cement testing machines and apparatus are employed by the users of cement on buildings, and for other purposes, or how many builders test their cement; the number of the latter would be out of all proportion to the number who do not.

In the larger class of buildings the clerk of works has ample duties to perform without testing cement, and it would seem to most people to be unnecessary to employ a man specially experienced in that direction, and so where it is supposed to be practiced it is more often than otherwise a spasmodic operation.

Where large engineering operations are in progress it is a different matter; testing cement is usually an important factor in the carrying out of the works.

So that it becomes difficult in a general way to ascertain whether the cement we are using is up to standard requirements or otherwise, and when we realize the confidence that has to be placed in its quality, and the possible fatal results which may occur from its failure, it is a serious matter to have to deal with.

The only way to insure comparatively safe results is for manufacturers to test each batch of cement, say, seven or fourteen days after it comes from the grinding mills, bag it up with some form of fastening that cannot be tampered with without detection, and send a copy of the test signed by the works' chemist with each consignment. Some firms are now practicing this arrangement, and it would seem desirable that with a material so difficult to deal with, like some other articles of commerce, its description should be made compulsory; the best makers should raise no objection—on the contrary, for it would weed the market of much of the cement with which no guarantee is given or expected, the only recommendation being the price.

With the perfected machinery for making cement and the aid of skilled chemists there should be no reason for making an inferior quality, assuming that the raw materials are of the proper description, except the saving in cost, which is out of all proportion to the difference in quality. Then there is the possibility of the inferior kinds being put into sacks branded as best, if branded at all—may be inadvertently; but where the same article is made in the same building, though of various qualities, and undistinguishable one from the other, the danger exists. That others beside the purchaser may not be aware of the quality it is sometimes the custom to give fanciful names to the different kinds, which are branded on the sacks, such as "Cyclops cement," "Leviathan cement," etc.

If the sacks were simply branded 1, 2, and 3, denoting first, second and third qualities, the meaning would soon be clear to other people besides the seller and purchaser.

There has been no end of varying opinions relative to the contraction and expansion of concrete. It may be safely assumed, I think, that the aggregate alone undergoes no change; possibly the addition of water may cause expansion in certain aggregates to an unmeasurable extent. Cement, on the other hand, usually expands slightly, and so therefore must concrete, unless we assume that its particles undergo slight compression arising from the action of the cement, and which is not improbable.

But with unseasoned and ill-conditioned cement there is no limit to the mischief of which it may be the cause, both to concrete and to brick walls built with cement mortar. It will fracture brick and stone walls up to two years after completion, and possibly longer—the former is within my knowledge. When the walls of buildings have been erected with cement mortar and the floors are concrete, the cement for the latter being of a suitable description and the cement of the former the reverse (failures of this kind have occurred), the result is invariably put down to expansion of the concrete, and the floor contractor possibly becomes an innocent victim to damages.

If, however, the cement were of the same inferior quality for both walls and floors, the failure is obviously increased, as the latter assists in straining the walls or lifting the bricks off their bed. In walls of this character where there are possibly no concrete floors and vertical cracks occur, more generally near the ends, or adjacent to windows or door openings, where there is the least resistance, the foundations at these points are sometimes assumed to have sunk and underpinning has taken place.

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In describing the cause of failure and the results, where expansion takes place, I admit that the general opinion is not altogether, if at all, the same as my own, but I am telling what has come under my own observation on numerous occasions for many years past, and not voicing the possibly general opinion.

Where large concrete floors are formed the expansion, if ever so minute, should be seen in the mortar joints of the walls upon which the floors bear, but I have never found this to be the case where proper cement was employed; the most satisfactory trial of the kind in my own experience was with a number of floors 120 feet in length and 26 feet in width; some were formed between steel joists four feet apart, others rested on dwarf walls, and not the slightest sign of expansion was apparent four years after in any of these floors.

Where unseasoned cement has been used for floors and flat roofs expansion may not develop for months, or even for years, for the action of cement is very erratic, and often not easy of explanation.

The conclusion I arrive at is—and I find it coincides with the opinion of others who have had much practical experience with concrete—that the latter expands slightly when first deposited in place, but that when the permanent set of the cement has taken place, say within 48 hours, it ceases, and as a large floor is usually some time in hand the bulk of the concrete has passed beyond the expansion stage before it is completed. How long it is before contraction takes place seems to be very uncertain, and when it does it is usually not of a serious character, unless mosaic or terrazzo is attached thereto. In many instances no contraction has been apparent at any time. These deductions are made on the assumption that the cement is suitable and the concrete is not exposed to climatic changes.

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Drawing the Line

Architect—"And about the drawing-room, sir?"

Newrich—"Now, look 'ere, I've let yer put in a billiard room when I can't play billiards, and a reading room when I don't like reading; but when it comes to putting in a drawing-room, when I can't draw a line, I object. It's a bit too thick; I want a house, not a home for artists."—Carpenter and Builder.

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Don't grumble if you don't get as good results from old material as from new.

Heating, Lighting and Electrical Work

Domestic Gas Lighting from the Fixture Manufacturers Standpoint*

By L. R. HOPTON

THE first gas fixture may possibly be considered to have been the bladder full of gas which William Murdock, of Cornwall, England, lighted one evening in the year 1792 for the edification of a few invited guests. Developed first in England and introduced in this country by David Melville, of Newport, R. I., in 1806, gas as used for lighting has enjoyed a steady development. The earlier gas fixtures were curious structures, and being made before the appearance of iron pipe, were both expensive and cumbersome.

It is not my purpose to go to any further length into the early history of the gas fixture, but I do wish to emphasize the fact that as the use of gas for illuminating purposes became more general the gas fixture continued to enjoy a fairly steady development, both in workmanship and in artistic merit. With the advent of the electric lamp, however, the development of gas fixtures received a remarkable quietus, notwithstanding the fact that for a short period electric lamps were used largely as attachments to existing gas fixtures. In the case of the electric lamp this transition period did not last very long, so that in a few years manufacturers were called upon to turn their best skill and expend their best possible workmanship on the construction of fixtures for use with the electric lamp. While this may be only what should have been looked for in view of the many advantages of the electric lamp, to the man interested in gas fixtures it is not very consoling to know that over three-fourths of the fixtures put upon the market today having any claims to artistic merit are adapted to the use of electricity only. The introduction of the Welsbach mantle brought about a new condition of things. It has been said that the mantle saved gas from passing into oblivion from the field of illumination. While this is, of course, an exaggeration, it certainly gave gas lighting a very pronounced stimulus. Like its predecessor, the electric lamp, the first appliances for use with the mantle were crude and unsatisfactory, but they were sufficient to demonstrate the great possibility of this form of lighting from an economical point of view.

I cannot summarize this portion of my talk better than to say that we have before us two truths that may be taken to be self-evident. The first one is, that gas for lighting cannot be made as convenient nor as artistic as can electricity. The ready means of control by switches at remote distances and the absence of any grade of combustion, render the electric lamp of particular value as a lighting medium. Gas lights cannot be used to produce the beautiful effects obtained by embedding the electric lamp in ceiling and cornice decorations, nor can they be used in many of the elaborate concealed light effects. Proper disposition of the heat from a gas light must be carefully considered; and notwithstanding the spark lighting attachment, the pneumatic valve, or the self-lighting mantle, there is no device for lighting gas as readily as the electric lamp. In short, fixtures can be designed and effects produced that are absolutely impossible in gas lighting.

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* Read before the National Commercial Gas Association. Mr. Horton is Superintendent of the [illegible] Company, New York and San Francisco.

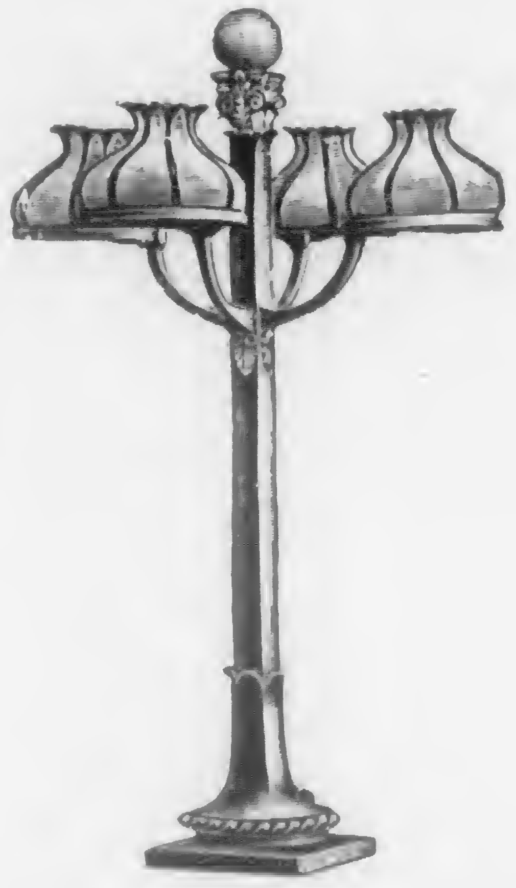
The second axiom is, that the electric light, candle power for candle power is more expensive than the incandescent gas light. Electricity must be generated by means of a steam boiler, engine and dynamo, while gas is generated from coal or other materials and used directly as a fuel to produce light. For domestic purposes the electric light costs anywhere from 0.5 cent to 1.5 cent per 16 candle power per hour, while the mantle gas light costs about 0.1 of a cent per hour for the same unit. I am well aware of the rapid strides being made by inventors of electric lamps and noticed particularly a very optimistic opinion expressed by Mr. Lansingh in a paper read before the American Gas Institute at Chicago last October. He states as follows:

"During the past year the situation from the electric standpoint has materially altered; there has been, in many cases, a reduction of rates, often of a more sweeping nature than corresponding reductions in gas, but the principal change has been in the introduction of new lamps of higher efficiency. The first lamp of this nature to appear on the market was the Gem or high efficiency type, consuming 2½ watts per horizontal candle power. This was followed by the Tantalum lamp, consuming 2 watts per candle power; and the electric industry is looking forward to the introduction of a new style of lamp, the Tungsten, which is promised for the market at 1¼ watts per candle power. Other types of lamps, such as the Osram, Ossium, Zirconium, Kuzel, etc., give promise of even higher efficiencies, and it is confidently expected by the electric trade that within two or three years there will be lamps on the market with an efficiency of perhaps ½ watt per candle or 1-7 of the present 3½ watt standard. Granting, however, that for some time to come, the 1¼ watt lamp will be as high an efficiency as will be attained in commercial practice, we see that the electric man will be able to reduce his current consumption from 3½ to 1¼ watts per candle or a reduction of nearly 2-3 of the present cost. We therefore see that with the introduction of a lamp of this type, gas will be placed in the same position, perhaps not quite as good, as it was when we had only the old type of burner and the old 4 watt incandescent lamp. The cost of electric lighting then will not be greater than 1½ times that of gas and with a possible reduction to equal or even lower cost."

Notwithstanding these interesting arguments, it may safely be stated that the incandescent gas light is very much cheaper than the electric lamp. Of course, there are favorable locations near abundant water power, where electricity in cost may come into closer competition with gas, but on the other hand, there are locations where nature has given the gas man an abundant supply of gas, which he can secure by merely drilling into the ground and piping. In general, it may be said that we face these two conditions: The greater adaptability of the electric light and the greater economy of the gas light. While the gas appliance man has doubtless made the most of his advantage in low cost of lighting. I hope to show that he has not gone as far as possible in the other direction, namely, the increasing of the scope and attractiveness of gas lighting.

No one knows better than yourselves the limitations of your particular fields and the needs and sectional peculiarities of the public that you aim to serve; but while each of you cater to a small section or coterie, the manufacturer of fixtures on a large scale is in touch with the needs and special requirements of all parts of the country. By our contact, not only the buying public, but with decorators and architects, we are perhaps in a position to obtain a broader view of the situation, and to see a phase of the field of gas illumination that is not accessible to the gas appliance man. We know with what aversion a large portion of the public treats anything in the way of gas fixtures. We are constantly reminded that decorators look on them as things to be avoided, and that many architects advise against them wherever possible; and this aversion exists in the fact of increasing cost of installation, by reason of the more rigid requirements on the part of the Boards of Fire Underwriters.

While this state of feeling is principally due to the pronounced advantages of the electric light, it is also fostered in large measure by the way in which gas lighting is being handled today. To these people of refinement, gas lighting is associated with the ugly fixtures, crude and unfinished attachments, and all manner of inconveniences. They will cheerfully have their houses piped for gas ranges and water heaters, but are willing to pay much more for electric wiring for the use of electric lighting fixtures. Of course, this condition does not work disadvantageously to the interests of the large fixture manufacturer. He is equipped to make any style of lighting fixture that may be called for; but to the man interested in gas fixtures and the more general use of gas for illumination, it is a situation that must be seriously considered. Notwithstanding the fact that both electricity and gas are frequently furnished by a single company, there exists a natural rivalry between the appliance men in the two departments, and the gas appliance man must do all in his power to build and maintain his department. In cases where there is keen competition, such as exists in many Western cities, it is of still more importance that the gas appliance man do all in his power to overcome this aversion on the part of the public to the use of gas for illumination.



It seems to me that the general public may be divided in three fairly well defined classes regarding their attitude toward the question of lighting: The first class may comprise that large portion of the public which considers but two things, candle power and cost, and by cost I mean not only first cost, but also the cost of operating and maintaining the fixture or burner. To this class may be assigned all store and shop lighting, where arcs and other high candle power units are more commonly used. It may be natural to suppose that in such cases the lighting fixture is considered as a necessary mechanical appliance, useful for the few hours that it is lighted, and during this time expected to produce most economic results, but a bothersome and obstructive piece of mechanism during the many hours that it is out of commission. While some attempt has thus far been made to construct these high power gas appliances more ornamental, it is interesting to observe the form in which the electric arc lights are being used in some of New York's largest retail stores. They are attractive and in harmony with other decorations, and the effect is noteworthy. The gas arc has a large field of usefulness and has certainly been a boon to gas companies and appliance men. While from the standpoint of scientifically correct illumination it is questionable whether it is best to group the light into single high power units, the fact remains that as a companion or substitute of the electric arc light it has a large and growing field. In this class also should be included a large portion of the public who are interested in domestic lighting, and who are largely the buyers of the cheapest fixtures and single burners. Attracted by some advertisement or impressed by the light-giving qualities of some type of burner, they aim to get light, and lots of it. They want as much light as possible in one burner, want it with the consumption of little gas, and seem to be perfectly willing to sacrifice simplicity of construction and neatness of appearance to this end. These people care little if the burner has a Bunsen tube 3 or 4 inches long and will load it up with chimneys, reflectors, diffusing cups and metal work, if by so doing they can increase the light. They will put on a neat and well appearing chandelier a single powerful burner and use it for the entire illumination of a room. With people of this class, the fixture manufacturer rarely comes into direct contact. They buy their fixtures and their burners from supply dealers and from the gas company stores; and their purchases form a large portion of your business.

A second class we might consider is the large and fortunately growing portion of the public, which considers appearance and workmanship as well as candle power and cost. People of this class exercise greater care in the selection of their fixtures and burners and desire them to be of good workmanship and as attractive in appearance as possible. They desire a better distribution of light and prefer to use a smaller number of units on their fixtures, even though the first cost and the cost of maintenance are a little more. While they are not always satisfied with the attachments necessary for good illumination, they secure the best they can, and desire these appliances to match the fixture in finish and glassware. Many of these customers are sent to you by buyers and architects and they generally invite your aid in making their selections.

In still a third class may be considered that portion of the public which considers candle power and cost of secondary importance and attaches the greatest importance to the decorative and harmonious appearance of the fixtures. The gas appliance man does not, as a rule, come in contact with this class, as these people generally use electricity for lighting and buy principally from the manufacturers, in consultation with their decorators and architects. To them the lighting fixtures must be an ornament, and one that is in absolute accord with their scheme of decoration. They are willing to pay a good price for the fixtures that meet their fancy, but are critical in their selection and exacting in their requirements. There are numerous cases where people of this class have elected to use gas for illuminating purposes, and for them some really beautiful and interesting effects have been produced.

And now having touched upon the history of the case and having analyzed the symptons, let us proceed to prescribe a remedy.

First—Equip your departments to properly sell gas fixtures. While this remedy is more applicable is some cases than in others, a majority of appliance departments are not equipped to properly handle this portion of their business. Generally the salesmen are not trained to sell fixtures. It takes years to make a first-class fixture salesman to sell fine goods, yet the selling of gas fixtures is left to clerks, or others equally unfit, who can recite without a pause the advantages and claims for economy regarding gas ranges and water heaters, but who know nothing more regarding a fixture than the information given on the price tag. Such a salesman cannot properly understand a customer's requirements, nor talk intelligently with critical buyers of good things. Train your salesmen to understand and appreciate style and workmanship. Have them interest themselves in the customer's needs and peculiar conditions and let them give that intelligent advice and aid that a customer has the right to expect of you. Remember many of those customers appreciate good fixtures, and while they may not have a clear-cut opinion as to what they especially desire, they are dissatisfied if you do not appear to realize just what a problem the selection of their lighting fixtures is. Encourage them to pay a fair price for something worth having, and in the words of the familiar saying, "the satisfaction with the quality of the article will remain after the price has been forgotten." Have your samples displayed to the best advantage. A small stock of well selected fixtures, arranged in an attractive manner, is vastly better than a large number of samples crowded together and poorly arranged. To the average customer, nothing is more bewildering than to gaze upon rows and rows of samples and attempt to make a selection. Of course, you are obliged generally to fill orders from stock, and customers desire the display of a number of samples from which to

make their selection; but let the method and arrangement of display be one of your first considerations.

Second—Be dignified in your advertising. There seems to be a tendency toward exaggeration in the advertisements of gas appliances that has the effect of lessening the confidence of the public in all gas appliances. While appliance managers are perhaps not directly responsible for this, they can certainly exert a strong influence in the right direction. What would you say, if you saw advertised tomorrow that a new incandescent electric lamp had been put on the market giving 100 candle power for 50 watts of current? It is equally as absurd to expect such an announcement as it would be to credit it. My attention has been repeatedly called to advertisements of electrical appliances, and I noticed particularly one describing a new electric lamp that has been recently put upon the market. The statement is made that it is a 2 watt lamp and should develop 22 candle power, with a consumption of about 44 watts. If you have occasion to purchase this appliance and test it, you are reasonably certain that the figures shown in the advertisement will be verified, and you are much surprised if you find a gross misstatement of facts. On the other hand, in recent popular magazines I have noticed advertisements of gas lamps, which are excellent devices, well made and good sellers, but advertised to give 200 and 300 candle power with a consumption of but a few feet of gas per hour. What would you say if an agent called upon you with the statement that he had a burner that would give 100 candle power to the cubic foot of gas? Wouldn't you sit up and listen if he even said 25 candle power and you could place full confidence in his statement? A short time ago a salesman strolled into my office to show me a new type of gas arc, having four burners for four mantles and a large globe covering the whole cluster. He evidently did not know that he was "bringing coals to Newcastle." I became interested to hear what he would say, and asked him a few questions. "This light is wonderful," he said. "It will give you 1,000 candle power, or as much as an electric arc light." This was truly something startling, and I asked him how much gas it would consume. "About 10 feet an hour," was his reply. Truly this was more startling. I looked over the familiar needle valve, Bunsen tube and mantles, and remarked, that the only novel feature that the appliance seemed to possess was the long length of the Bunsen tubes. "That is what does it," he told me, "only those are not Bunsen tubes, because we make them ourselves." This may be an exceptional case. I hope it is, but it is just such representations that tend to discredit gas for illumination.

Third—Encourage the adoption of smaller and better distributed units of light. A recent editorial in one of the scientific papers on high power light units gives a very interesting opinion on this question.

"That there is a general tendency toward the using of higher units is plainly evident from the facts. So far as there is genuine competition between gas and electric light the contest is usually to see who can produce the greatest flood of light for a given expenditure, entirely regardless of the visual and esthetic qualities of the illumination produced. The incandescent gas burner, with its fairly dazzling light of 60 rated candle power or more, could only be beaten by a cluster of the standard 16 candle power electric lamps, or the electrical arc. To compete with the latter, the "gas arc" was produced, which was simply a cluster of incandescent mantles. At last accounts, electric lighting had scored a complete victory by the introduction of the flame arc, which has left the gas arc and all other forms of illumination hopelessly behind in the race for garish brilliancy.

"In many respects the contest reminds one of the country band tournament, in which the band that made the most noise won the prize. Increase in light power by closely clustering small light units, has usually and rightfully been condemned by illuminating engineers; and the most serious fault of the arc lamp has been its necessarily high light-power as well as high intrinsic brilliancy.

"There are doubtless many cases where multiple lights, either in clusters or in chandeliers, can be very advantageously replaced with the more efficient units that are coming into use, but the ordinary dwelling house certainly does not afford such a case. While the general race of each to outshine his neighbors is interesting along "the Great White Way," there are few who wish to carry the contest into their private apartments; the rest and eye comfort resulting from a soft and comparatively low intensity of illumination are still demanded for the home. The chandelier with multiple lights, or the cluster, has the advantage of affording a variable illumination, and on this account alone must always take precedence over the single unit of high power for private lighting."

I do not intend to unduly criticise the gas arc in this statement, although prominent gas company men have expressed their disapproval of its general use, and a few years ago the American Gas Light Association had a lengthy discussion on this point. I do intend to criticise the use of powerful burners on a single arm of a chandelier or bracket. The only thing this method of lighting has in its favor is that it is cheap. It does not give good illumination, it is bad for the eyes and it is artistically barbarous. What is needed is a scattering of smaller units, thereby producing a better illumination, and at the same time an attractive appliance for lighting. Personally, I am a strong believer in the minature mantle, such as No. 63 Welsbach. This little mantle gives much more candle power than a standard electric lamp and is the size used very generally by one of the largest makers of burners and appliances for gasoline gas in the country. I shall be very glad to see a mantle and burner put on the market of a size between this and the usual standard, something about the size of the No. 2 Kern mantle, that would give 50 to 60 candle power with about 3 feet of gas. Such a mantle could be used with standard electric glassware and would be a very useful size for fixture purposes. Regarding the inverted type of burner, I can only say that we are watching its development with much interest. In Mr. Lansingh's paper, to which I have already referred, he says:

"There are, of course, many disadvantages today with the inverted burner, chief of which must be reckoned the discoloration of fixtures, and it would seem that the gas engineer has a fruitful field in getting fixture houses to design a line of fixtures which are especially suitable for the inverted type. Even the question of finish is important, as the ordinary brush brass or polished brass fixture tarnishes very quickly with the heat. If, on the other hand, finishes such as verde antique or other dark finishes, were used on both burner and fixture, the discoloration would show very much less. Of course, in many cases such finishes would not be suitable, but where they can be used, it will do away largely with this serious objection. The attempt to adopt the inverted burner to the present type of fixture is generally unsatisfactory; but it should be an easy matter to design fixtures which will be suitable for the inverted type, so that it will be available in many places where not suitable at present."

These suggestions regarding fixture construction can be carried out if conditions warrant the expenditure of the necessary time and money, and I trust that I may hear an expression of opinion from you on the question.

Fourth—Raise the standard of the appliance, and especially of the fixture that you sell. Too often, sad to say, the buyer of fixtures knows little of style or artistic value, and not much more of good workmanship. His standard seems to be, so much brass for so much money; and the manufacturer, striving to maintain a reputation for well made and really good fixtures, well finished and artistic, is turned down for the smaller maker, who buys stock, castings, shells and other metal work, employs cheap and inferior help and makes a mongrel design at a few cents lower price. These manufacturers receive very little encouragement in their attempt to elevate the gas lighting fixture and thereby the whole tone of gas lighting. Of the appliances that you carry, let your ranges and water heaters be well made, efficient and economical; let your mantles be good and reliable; let your burners and other attachments be well made, efficient and as attractive as they can be procured, but above all, let your fixtures be well selected, well made and attractive. These appliances, more than anything else you handle, should be both instruments of usefulness and of decoration.

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A New Society for San Francisco

A year ago last January a society was formed in New York City for the advancement of the theory and practice of illuminating engineering and the dissemination of knowledge relating thereto. The necessity for such a society has been proven by the remarkable degree of interest shown in the subject and in the formation of branches or "sections" in most of the large cities in the East.

Feeling that the time was particularly ripe for the installation of such a section in San Francisco, the present rehabilitation of the city making the consideration of the proper illumination of our new buildings one of paramount interest, the secretary for sections is in the city and has organized a branch with the following staff of officers: Chairman, W. J. Miller; secretary, Wm. H. Crim, Jr.; board of managers, Fred Meyer and Prof. Carey of the University of California. With this staff, consisting of three architects and a university professor, all men of the highest standing in their respective lines, the section should flourish from the beginning. It has been launched under most favorable conditions, having a charter roll of over thirty-five members.

The inference might be drawn that, inasmuch as this is a subject usually left to technical men, the layman is not eligible, but as the subject of proper illumination is of interest to most everyone, and as the purpose of this society is "the dissemination of knowledge relating thereto," it is evident that qualification for membership is not limited to men of technical training. Meetings will be held for the presentation and discussion of appropriate papers; the publication of such papers; of discussions and communications and through committees, the study of subjects relating to the science and art of illumination, and the publication of reports thereon. The various papers and discussions are printed monthly and are furnished gratis to members.

* * *

In Skyscrapers

Timkins—Well, I understand that you made money and are living high.

Tomkins—My dear fellow, don't you know that the height at which one lives varies inversely as the amount of money that he makes? I used to live on the fourteenth floor; now I live on the fourth.—Pacific Monthly.

Terra Cotta and Brick

Sand=Lime Brick

By E. W. SMYTHE

THERE seems to be a general impression that sand-lime brick is a new and untried building material; scarcely out of the experimental stage. Although sand-lime brick cannot boast of a pedigree traced to the time of the Pharaohs or the Tower of Babel, still it has been in use long enough to establish, without doubt, its quality as a first-class building material.

Sand-lime brick were first made in Potsdam, Germany, about 1820. Potsdam, situated in central Germany, is surrounded by a broad sandy plain; there being no clay or stone available for building purposes, sand and lime were made into mortar, molded into bricks and allowed to cure from three to four months in the open air. These brick withstood all the required tests and increased in hardness with age. The attention of Dr. Michaelis, of Berlin, in 1880, was attracted to this peculiar kind of brick, and after experimentation, he discovered, that by subjecting the green brick to steam, under pressure, the brick after a few hours was rendered as hard as though they had been exposed to the atmosphere for many months. After the discovery made by Dr. Michaelis, the manufacture of sand-lime brick increased rapidly throughout Germany and many large plants for their production were erected.

In our own country, the oldest sand-lime brick of which we have any record, are those in the walls of a house in Mobile, Alabama, built fifty years ago. As to whether these brick were made in this country, or elsewhere, is not known, but at any rate they are in good condition and appear to have been made in a manner similar to those first made in Germany.

But not until 1901 were sand-lime brick manufactured in any considerable quantity in the United States. During this year two plants were in operation. In 1903, sixteen plants; in 1904, fifty-seven, and in 1905, 130. At present, there are probably about 200 plants, all told. Among these plants there is a great diversity in the manner of handling and combining their materials. These differences occur from local conditions and the way in which they hydrate the lime and the manner of incorporating the lime with the sand.

In a general way, I shall now describe the process of manufacturing sand-lime brick, as carried on by our plant in Wisconsin, and then refer briefly to some of the methods used by other manufacturers.

The sand, as it is brought in dump cars from the bank, is shoveled into an elevator boot, from which it is elevated about thirty-five feet and discharged upon a vibrating screen. Here it is run through a ¼-inch mesh screen, and falls into a conveyor over the numerous coils of a steam dryer. The sand must be perfectly dry. There can be no half-way place in regard to the dryness of the sand, for you cannot mix sand and lime intimately, unless both are thoroughly dry. The wet sand, as it rests upon the pipes, dries and runs down into a hopper-shaped bin in the bottom of which is a conveyor for drawing the sand out as it is needed.

The lime is slacked in water-tight steel boxes, mounted on wheels. Each of these has a capacity of about 450 pounds of dry slacked lime, a quantity sufficient for one thousand brick. The quicklime is weighed out, placed in the boxes and the proper quantity of water added to it. To determine the correct amount of water to apply to the lime, in order that a dry slack may be secured, is not always easy, as the lime, when received at the factory is nearly always more or less air slacked, and also there is considerable variation in the quality of lime, even when the limestone comes from the same ledge. After applying the water, the lime cars are run under the brick cars in the same cylinder in which the brick are hardened, and the slacking is thus completed, and the surplus of moisture (if not too great) dried out. The dry slacked lime is now dumped from the cars upon a grizzly, which takes out all the large cores. Passing through the grizzly, the lime descends into a hopper and is conveyed to an elevator, which discharges it into a bolting machine where all the small cores are extracted. Leaving the bolting machine, the lime falls into a bin, directly opposite the bin containing the dry sand.

Between the lime and sand bins is a measuring device, and the dry sand and lime are brought to it by conveyors, placed in the bottoms of their respective bins. The right proportions being measured out, the mixture is allowed to fall into a preliminary mixer, where for two or three minutes the sand and lime receive their first mixing. Passing on from this mixer, the sand and lime are fed by a conveyor into a tube-mill, where they are thoroughly ground and mixed; each grain of sand is completely coated with minute lime particles. Leaving the tube-mill, the mix is at once elevated to a pug-mill, where just sufficient water is added to cause it to cling together when compressed slightly in the hand. The pug-mill discharges the dampened material into a four-mold press. The green brick are loaded upon cars, one thousand brick to a car, and run into a large steel cylinder, fifty feet long by six feet in diameter. After filling the cylinder (which holds a day's run), live steam is turned into it. About two hours are required to bring the steam pressure up to 120 pounds per square inch, which pressure is maintained for eight hours. After steaming, the brick are ready for market. Twenty-four hours have elapsed since the sand left the bank until it leaves the cylinder, a finished brick, ready to lay in the wall. In several instances, we have afforded masons the unusual pleasure of laying hot brick on a cold morning.

In the process of manufacture just described, the lime was slacked before incorporation with the sand, but in some processes the quicklime is ground, then mixed with the sand and passed through a tube or ball mill. After grinding, the proper amount of water is added, and the mixture is conveyed to a silo, where it is permitted to slack and cure for twenty-four or forty-eight hours. It is then withdrawn and made into brick. Others grind but a part of their sand and lime and some do no grinding whatever. There are some factories which use the damp sand directly, as it comes from the bank. To this damp sand, damp slacked lime is added. The two are run through a short pug-mill, then to the press and made into brick. The process is beautiful for its simplicity, but the product is not a credit to the sand-lime industry.

The materials entering into the manufacture of sand-lime brick are as common as that entering into the production of clay brick, but as all clays are not suitable for making good clay brick, so all sands are not suitable for making good sand-lime brick. The sand must be clean and contain a high per cent of silica. Of all the impurities in sand clay, iron oxide and feldspar are the most common. The two latter may be left out of consideration, as they seldom appear, save in small quantities. Clay, however, is nearly always found in sand, and many times in considerable quantities. To determine what effect the presence of clay has upon the strength of sand-lime brick, Mr. Pepple, a member of the Ohio Geological Survey, made some valuable experiments. He made up numerous samples of brick, varying in each a percentage of clay. Upon testing these brick, he found that up to 3 per cent addition of clay, very little change took place in the strength of the brick, but for amounts over this there was a decided decrease, both in crushing and tensile strength. It was also interesting to note, that small amounts of clay decrease slightly the water absorption of the brick, acting to some extent as a water-proofing agent.

For the manufacture of sand-lime brick, a high calcium lime is by all means the best. Magnesian limes, while they give just as strong a brick as do the high calcium limes, are too slow in slacking, and one runs considerable risk in using them, since, if the lime is not thoroughly slacked before the brick go into the hardening cylinder, slacking will continue, and the lime expanding, will crack and ruin the brick. The best practice demands 8 per cent by weight of slacked lime. A less amount of lime than this does not give a brick first-class in strength; and a larger per cent than this, while it adds slightly to the crushing strength of the brick, it also adds to the water absorption, and incidentally to the cost.

To secure the best results, the lime must be thoroughly mixed and ground up with the sand. For this mixing and grinding there are various machines upon the market which can be used. Among them are the tube-mill, ball-mill and gyratory-mill. The last two mills mentioned, have one advantage over the former, that is of being able to handle the material when it is slightly damp; whereas, in the tube-mill, a trace of moisture in the material causes the lime to stick and form a coat over the side of the silex lining, in which case, little or no grinding is done by the mills. I believe the tube-mill to be the best, as it not only gives a very finely ground product, but also gives a more thorough mix than the other two mills. Another point in its favor is, that the cost of repairs on a tube-mill is considerably less than that required by the ball or gyratory mill.

In the manufacture of sand-lime brick, the machinery is subject to much greater wear and strain than that used in the production of clay brick, and the maximum of this wear centers in the grinding mill and the press. The press must be massive and built to withstand excessive strains, because a slight variation in the amount of water added to the mix, makes a very great difference in its compressibility—therefore, the press must have a large surplus of strength in order to withstand this extra stress, which will most likely be brought upon it. Within the press, the greatest wear is on the mold box and mold liners. A set of the best liners will turn out about one hundred thousand perfect brick. Beyond this number, they become considerably worn, and the edges of the brick are feathered and rough, so that they are suitable only for common brick.

In steaming the brick, two methods can be followed to secure the same result. Either a high steam pressure for a few hours, or a low pressure for a comparatively longer period. In either case, the brick will attain the same degree of hardness. Most manufacturers are, however, agreed that eight hours at a pressure of 120 pounds per square inch (two hours being required to bring the cylinder up to this pressure), is the best and most economical practice. The steam must not be turned in too fast, as the surfaces of the brick will become highly heated, while the interior remains cold; the unusual expansion thus produced, causes the brick to check.

Through the over zealous efforts of machinery jobbers, who think only of disposing of their machinery, an erroneous impression has been spread abroad, that sand-lime brick can be manufactured at extremely low cost. The cost of manufacturing sand-lime brick depends upon the same variable quantities as does the manufacture of clay brick or any other product. Labor and fuel are the main items in the manufacture of brick, and to produce brick cheaply, a dollars worth of labor must be got for every dollar paid for labor, and for every pound of fuel the greatest possible number of heat units must be utilized. It is the stopping of the little leaks that make the profits in manufacturing.

All things considered, I believe that an economically operated sand-lime brick plant and an economically operated clay brick plant, both making a first-class product, will; providing the cost of labor and fuel is the same, produce these brick at about the same cost.

In closing, I wish to quote two statements made by men, who, in their respective countries, are well acquainted with building materials. Says Fritz Polman, Architect of the Minister of Public Works of Germany, "The satisfactory experiments made with sand-lime brick have induced the administration of the State and cities to abandon their attitude, which was for a long time unfavorable, and to use this material in numerous public structures." The German government will use only building materials which have been subjected to thorough tests, extending over a period of ten years.

In a report issued by the Department of the Interior, of our government, Mr. Middleton, who compiled the report, makes this statement in reference to sand-lime brick, "That this method of manufacture of building material is a success, and will be a permanent factor in the building industry, is hardly to be doubted. It is also equally certain that it will never displace the time-honored burnt clay brick."

* * *

Clay Tile as a Building Material

THE use of the baked clay tile as a building material is becoming each day more and more general in this country and before long the tile will be almost as universal in its application in America as it is in Europe. The advantages of the clay tile are threefold in character. They are extremely hard and durable and last virtually forever. In fact baked clay is far harder than marble, slate or any other natural stones. It is likewise fireproof. Its excellent sanitary qualities are due to the fact that it is non-absorbent, germ-proof and easily cleaned. As the clay tile can be baked in almost any color, form or design the artistic possibilities of tiling are almost limitless. Its decorative qualities and extreme durability make the clay tile relatively one of the cheapest of the building materials.

The tile was formerly regarded as a luxury to be enjoyed only by the wealthy, but now it is generally looked upon as a hygienic necessity in many parts of modern building. The same sanitary conditions which made the tiled floors and walls of the bath-room an absolute essential, are bringing about the introduction of tiling into the kitchen, laundry and butler's pantry. Tiled walls are already regarded as a necessity in the modern hospital, and a tiled floor is looked upon as the nearest approach to the ideal hospital floor. In order to attract the public by their sanitary arrangements drug-stores, butcher shops, dairies and lunch-rooms are now being built tiled throughout. Tiled or ceramic mosaic floors are met with today in hotels, railroad stations, theatres, banks and other public buildings of all kinds.

The tiled or faience fireplace and mantelpiece is now a regular institution in our American architecture. As a fire-resisting material which suggests warmth, tile work is the most appropriate around a fireplace, and the decorative features of tiling and faience are making these materials take up an ever greater proportion of the wooden mantel. While formerly the wooden mantel might be said to have contained a few tiles as facing, today the tiled mantel may be said to contain a little wood as a shelf, as columns or as finishings.

Like most of our American infant industries the tile industry is growing rapidly; but it is the utility of the product which commends it in the increasingly permanent character of our structures, as against the more temporary nature of older structures.—Industrial Magazine.

Loving Cup Presented to Henry A. Schulze, Architect, by the Cement Workers' Union, San Francisco

Where he was Going

Singleton—Well, how is the family getting on?

Doubleton—Pretty well, I reckon; but they are getting on my nerves.

Singleton—How's that?

Doubleton—Well, my wife's going to New York for opera, my son is going to college, and my daughter is going to travel.

Singleton—And where are you going?

Doubleton—Going crazy trying to pay the bills.—Ex.

A Few Notes on Founding and Inspection of Cast Iron

By E. O. RITTER

GOOD cast iron, more particularly that used for structural purposes, should show a smooth, clear outer surface, with neat and sharp angles, and when broken should be of a light, bluish gray color and close grained texture. The color and grain should be uniform, and should not show up in different colored "patches", nor bubbles, and the iron should be soft enough to become indented if struck lightly on the edge with a hammer, but should not "chip off." I have observed that if cast under pressure, the metal becomes more compact and sound, therefore I think columns, pipes and the like, are stronger if cast in a vertical, rather than a horizontal position. In castings of this class a very common defect is the variation in the thickness of the metal, usually caused by the displacement of the core. I have frequently found columns with as much as eighty per cent of the metal in the shaft on one side, while the other side was little more than a shell at some places. Much evidence of this kind was exposed in the recent disaster, and I believe that through lack of inspection many such columns are being used today. The proper way to detect this is by drilling ¼" or ⅜" test holes in the sides of the columns and measuring the thickness with a gauge made for the purpose. The thickness of the metal in pipes can be taken with the calipers and the surface should be closely examined for "swells", "scale" or "blisters". Another serious defect is "weak seams", commonly called "cold-shuts", and is caused by the metal becoming "chilled", so that it does not properly mix or unite. This occurs mostly in cases where castings are of such length as to necessitate "pouring" from both ends.

"Cavities", "blow-holes" or "honey-comb" are caused by the collection of foundry-dirt, etc., or by confined air. Defects of this kind are often closed with putty, loam, lead or babbitt, to deceive the inspector, but can be easily located on close examination by one who is familiar with this class of work, and if "tapped" with a hammer will give forth a dull sound. In castings where one side is much thicker than the other, the thin side cools first and is often subjected to strain during the cooling of the other side, severe enough to produce injury. This can be overcome to a certain extent by partially uncovering the thick side and allowing it to cool faster, but where castings are equally proportioned, it is a good idea to keep them covered and allow them to cool as slowly as possible.

After being removed from the sand, they should be thoroughly cleaned with steel brushes, superfluous parts chipped off, holes reamed, etc., and in facing care should be taken to get the exact length and bevel desired. Test bars should be taken from each "melt" as provided in the specifications, and should be broken in the presence of the inspector, who should note the deflection, breaking-weight, fracture, etc. Bars most commonly used are cast 1" square by 5′ long and in breaking should be placed on supports 4′ 6" apart, and loaded in the center until broken.

* * *

A passer-by was amazed at seeing an Irishman poking a dollar bill through a crack in a board walk.

"What under the sun are you doing that for?" he asked.

"Why, y' see, sir," replied the Irishman without looking up from his work. "a minute ago Oi dhropped a nickel through this crack, an' now Oi'm puttin' a dollar through so's to make it wort' me whoile to pull up th' walk an' get th' nickel."—Everybody's Magazine.

An Attractive Dining-Room in a City Flat

By MINERVA L. POWER

Before the San Francisco fire Minerva Lester Power sent to the House Beautiful a description of her dining-room in a cosy flat situated in the heart of the city. Her home was burned but her description is none the less valuable, now that the rebuilding of the city is well advanced and ideas such as those offered by her are much in demand. We print the article as it was written without change of tense.

SAN FRANCISCO abounds in flats. There are hundreds of them, all on the same plan inside and out; and the majority of them are furnished in the same stereotyped manner. But this little flat is so different that it is interesting.

The dining-room has a southern exposure with a large bay window through which the sun shines all day. The flat is in the third story, so a garden is impossible, but long boxes outside the three windows are filled with nodding nasturtiums, and are always a blaze of color, beginning with pale corn and running on up the gamut through the yellows and on into rich velvety browns.

The woodwork of the room is California redwood, the silky texture of which has been greatly enhanced by a stain and then a wax finish, which gives it a beautiful rich tone, between orange and golden brown. There is a plate shelf two and one-half feet below the picture molding, and this shelf caps a succession of plain panels about one and one-half feet wide, which extend around one side, and between the windows of the bay and between the two doors at the opposite end of the room. On the western side of the room, which is opposite the plain paneled one, and which is the long side of the room, is a coal grate of tan and terra-cotta brick. There are two china closets on either side of the grate, running out even with it and extending up the same height as the plate shelf. Extending up to the picture molding is a soft orange-colored frieze, on which a flock of white storks with black legs and yellow beaks are flying. The ceiling is a rich cream color.

The floor is stained and waxed and is several shades deeper than the side walls. It is all covered but a narrow strip around the sides by a very stunning rug, of oriental design, in shades of brown, yellow, orange, black, and quite a little blue.

The two doors to this room, which have three panels of the wood between and a corresponding width of shelf, have three of the cross-wise panels for the lower portion and six small squares of yellow glass above. The hardware, such as locks, knobs, and fittings, are of copper.

The dining-room table is of the craftsman sort, a design which might have been seen in the California building at the St. Louis Fair. The top is a solid piece of curly redwood polished and waxed till it closely rivals mahogany, and is more beautiful in color and silky texture. The seats for this table are a sort of stool or small bench, a design also seen with the table at the Fair. One is strongly reminded of the old missions when looking at this table and its odd little seats.

Instead of the usual linen cloth, the mistress of the house uses one long runner through the center of the table and two shorter ones across the width. These are of coarse gray homespun linen, hemstitched all around, and having embroidered down the left side of each end just inside the hemstitching in Chinese characters the family name in dull blue cotton. The napkins are of the same material and marked the same, except the letters are smaller.

The china used in this dining-room is blue and white Imari ware, many fine specimens of which decorate the plate shelf, with here and there a yellow or brown pitcher or jug covered with a brown rattan basket-work, so much used by Chinese and Japanese potters. Odd pieces of copper are also seen and blend exquisitely with the coloring of the room.

In the recess above the grate is a water cooler of crude shape in rich terra-cotta colors, also a deep blue vase with straight sides filled with bright blue corn-flowers, and a rare old blue Bohemian cut-glass wine bottle.

When the table is not spread, we find at one end a square of wondrous blue and brown Japanese embroidery, which has been applied to a soft brown leather strip, stayed here and there by a band of hand-wrought copper. Upon this rests a copper bowl filled with yellow or blue blossoms, and at the other end of the table, on a hand-beaten copper tray, stands a thick and heavy looking yellow pitcher with its thick and heavy drinking cups—six.

The curtains are also interesting. They are made of raw silk, a shade lighter than the frieze, and have the Chinese characters one below the other, spelling the owner's name, the letters some of them being six inches long and three and one-half inches wide. The letters run down the two insides of the curtains just inside the drawn hemstitching, to harmonize with the table linen. The gas and electric fixtures are of copper with globes of yellow, opaque glass.

* * *

How a Firm of Architects got its Name on a Building

CLOSE observation on the part of a newspaper man in Boston several years ago revealed a striking device employed by the firm of McKim, Mead & White, the noted New York architects. The device was an acrostic of names famous in history, literature and art by which the firm's name was to be engraved on the Boston Public Library. As may be observed, the arrangement defied literature, history and philosophy in arrangement, and this was the thing that attracted the newspaper man's attention. The names were conglomerated from all nations and ages into a seemingly neat ornamentation for the fine building. Beginning at the top of a space to be devoted to names famous in the world in various lines were the following:

Moses,
Cicero,
Kalidasa,
Isocrates,
Milton.

These names, through their initials, formed the first part of the acrostic, spelling plainly "McKim." A slight space appeared before the next list of names, which was:

Mozart,
Euclid,
Aeschylus,
Dante.

The initials of these names brought out the second name of the firm, "Mead." Another slight space, and the following names appeared:

Wren,
Herrick,
Irving,
Titian,
Eramus.

Here was the name "White" also engraved, the whole device bringing out the firm name of "McKim, Mead & White" in connection with the world's famed men. It was in 1890, just before the building was completed, that the discovery was made and published. The list of names was changed.

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

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*Executive Committee.

Next Convention at Chicago, Illinois

San Francisco Chapter of American Institute of Architects

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Engineers and Architects Meet

The Engineers and Architects' Association of Los Angeles held a regular meeting and dinner at Levy's Cafe Friday evening, April 12th, and discussed the advisability of the paying of contractors on the percentage or fixed fee basis as compared with the payment of the lump sum or fixed rate per unit.

Among those present were Samuel Storrow, Carl Leonardt, William Mulholland, A. H. Koebig, Gen. Forman, [illegible] Trask, John P. Krempel, A. B. Benton, H. Brett, R. H. Manahan, T. D. Allen, Horace Taylor, H. Z. Osborne, Jr., Charles Kern, City Engineer Shaw of Long Beach and Superintendent Peck.

Brief talks followed by Samuel Storrow, Carl Leonardt, A. B. Benton, Arthur S. Bent and C. E. Richards, showing that the trend is toward a better understanding and closer co-operation among contractor, engineer and architect.

Los Angeles Office Building

Architect Harrison Albright of Los Angeles has been employed to prepare plans for a ten-story reinforced concrete building for the Consolidated Realty Company. It will be an office building and the location is the corner of Sixth and Hill streets, Los Angeles. The building will have a frontage of 150 feet on the west side of Hill street and 126 feet on the south side of Sixth street, and the estimated cost is $400,000. All footings, columns, girders, beams, floors, roofs, interior and exterior walls, stairways, balustrades and facings will be constructed of concrete.

New Home for Brittain & Co.

Brittain & Company, the well-known hardware firm, is to have a home of its own with ample quarters for a constantly increasing business. The company has completed negotiations with Mrs. Elsie Drexler for a lease of a building that is being erected on the north side of Market near Mason, San Francisco. The structure will be of reinforced concrete, seven stories in height, and will have a depth of 90 feet, with a frontage of 56 feet on Market street and 25 feet on Mason. Reid Brothers are the architects and the Kittle Construction company is erecting the building.

The terms of the lease are for ten years at an approximate rental of $500,000. J. N. Brittain, president of the company, said in an interview: "While we have unquestioned faith in the business permanency of the uptown districts and will not abandon our store at Van Ness avenue and Turk street and the one on Sutter and Polk streets, we want to be among the first to help remake Market street. The terms of our lease are favorable, and we are pressing the contractors to rush the work."

Oakland Contractors Busy

The Roberts Bros. Company of Oakland are getting a good share of the new construction work across the bay. They have begun the erection of a new telephone building at Telegraph avenue and Forty-fifth street to cost $29,000, and a few days ago the company was awarded the contract for putting up the fine new Taft & Pennoyer building on Clay street, near Fourteenth. The plans call for a thoroughly modern structure with a private fire plant and a compressed air cleaning plant. It is calculated that it will take sixteen months to complete the building.

Palace Hotel Site is Cleared

The Palace Hotel ruins are no more. The last of the debris was cleared the past month and there is now nothing to hinder beginning work on the new hostelry. It took just 156 days to wreck the old building and remove the debris. The McLellan Company was given the contract on its bid of $100,000 in cash, and to receive all salvage in the way of junk and brick. Mr. McLellan says he was able to get 2000 tons of old iron and 8,000,000 good bricks. The latter sold at an average of $12 per thousand. About 5,000,000 bricks were broken in tearing down the walls and in breaking up the foundations below the sidewalks. Some of the latter were utilized by being crushed and sold for the same purpose as crushed rock.

Redwood City Court House

Architect Glenn Allen of 330 Turk street, San Francisco, has his plans for the Redwood City Court House accepted and the Supervisors will call for bids to be in by May 30th. The design calls for a steel frame structure two and one-half stories high with copper dome. There will be reinforced concrete floors and walls and brick exterior with stone trimmings. The estimated cost of the building is $175,000.

Normand W. Mohr, architect has moved to office No. 17, Arcade building, 1228 Fillmore street.

Building Quiet—Prices Drop

Architects report a noticeable falling off in business the past month. Small work has been stopped almost entirely and a number of architects have let out some of their draughtsmen. It is expected that the let up will be only temporary, however, and the result will probably be the restoration of conditions to their normal state. Meanwhile there should be a tumble in prices of material. Indeed, the fall has already begun insofar as lumber is concerned.

The price of lumber in the local market dropped $6 a thousand feet within a very brief period, and all indications point to a further decline. Other materials used for building are also on the decline, and property owners whose plans for rebuilding had to be deferred owing to the excessive cost of material will again invite bids for new structures.

It was recently learned that a number of the contractors who came here from the East since the April fire and have secured contracts for several very extensive structures are purchasing their material in New York, Chicago and other Eastern trade centers. Those places are not the only sources of supply. There are 100,000 barrels of cement from foreign ports on the waters heading for this city, not including seventy ships laden with building material of all kinds, including marble, iron, cement and lumber, coming to San Francisco from ports in England, France, Germany and Italy.

Lime has declined from $2.25 a barrel to $1.75, and a further decline is expected in the near future. One dealer made a contract to deliver in ninety days 3000 barrels of lime at $1.60 per barrel.

Big Steel Contracts Soon to be Let

Steel men are much interested in the outcome of the bidding for the new Phelan building, the Palace Hotel building and the First National Bank building. All three structures will cost $1,000,000 or more each, and each will have heavy steel frames representing an expenditure of many thousands of dollars. The contract for the Phelan job will probably be the first of the three to be let and it is reported that the American Bridge Company will be the fortunate competitor. The Phelan building is being planned by Architect William Curlett, while the D. H. Burnham Company are the architects for the First National Bank building.

Contract Let for Court House

The board of supervisors of Sonoma county has awarded the contract for building the new court house to the Rickon-Ehrart Engineering and Construction Company of San Francisco, which had two bids, one for $256,380 and the other for $325,880, the former being reinforced concrete with cement finish and the latter for reinforced concrete faced with terra cotta.

The figures submitted by the various bidders were based on reinforced concrete walls and cement or terra cotta facing. In the figures given below the bid "a" is for the cement facing finish and the "b" for the terra cotta finish. These are the bids of the various firms:

Pacific Construction Company, (a) $329,638; (b) $387,938.

Atlantic, Gulf & Pacific Company, (a) $356,000; (b) $379,000.

Rickon-Ehrart Engineering and Construction Company, (a) $256,380; (b) $325,880.

American-Hawaiian Engineering and Construction Company, Ltd., (a) $340,000; (b) $380,000.

Cotton Brothers bid $342,900 on the cement facing, but did not submit a figure on the terra cotta finish.

James O. Kuykendall, (a) $313,987; (b) $367,987.

P. J. Lynch, (a) $342,000; (b) $393,000.

Of Value to Architects and Engineers

Washington.—Extensive tests to determine the strength of the commercial timbers of the United States are being made by the forest service. Such information is of great value to architects and engineers in that it enables them to use more economically the products of the forest.

The tests are made on large beams. The material is generally tested while green, since timber is weakest in that condition. The strength of a beam is indicated by the greatest fiber stress developed during the test. Technically speaking, the breaking strength is termed the modulus of rupture. By using it the load that any beam will carry can be calculated.

Bakewell & Brown and M. J. Lyon are the only San Francisco architects who have registered in the open competition for the new building of the International Bureau of the American Republics.

The Worswick Street Paving Company has taken the contract for macadamizing the main business street in Hollister. Mr. Worswick is personally superintending the work.

Wages in San Francisco

	Per Day.
Plumbers	$6.00 to $7.00
Plasters	5.00 to 9.00
Brickmasons	6.00 to 8.00
Carpenters	4.00 to 6.00
Cement Workers	4.00 to 6.00
Hod Carriers	3.00 to 5.00
Laborers	2.50 to 3.00
Blacksmiths	3.50 to 4.50
Blacksmiths' Helpers	2.50 to 3.00
Sheet Metal Workers	3.50 to 5.00
Lathers	5.00 to 7.00
Stone Masons	7.00 to 9.00
Boiler Makers	4.00 to 4.50
Painters and Paper Hangers	3.50 to 5.00
Structural Iron Workers (Shopmen)	4.00 to 5.00
Structural Iron Workers (Helpers)	2.50 to 3.50
Machinists	3.50 to 4.50
Pattern Makers	4.00 to 5.00
Electricians	5.00 to 6.00
Molders and Core Makers	3.50 to 4.50

Book Review

"The Architects' Directory and Specification Index for 1907." Containing a complete list of the architects in the United States and Canada. Classified by States and towns, indicating those who are members of the American Institute of Architects; also the names of the officers and locations of the different architectural associations in the United States and Canada. Prepared with the greatest care to secure accuracy both in names and locations.

This directory, known among architects, manufacturers and dealers in building materials as the Red Book, has just come out for the year 1907, and is gotten up in a very commendable manner.

The general list of architects shows an increase, and the change of addresses and of firms has been very considerable during the last year. The activity in building has evidently resulted in many rearrangements among the members of the profession.

The list of architectural societies has been carefully revised, giving the officers for the present year.

The building departments are also carefully listed, giving the officers for 1907.

"The Specification Index" for this year has evidently received special attention, and is much more complete than ever before. Published annually — eighth edition. One 8vo vol.; red cloth. Price, $3.00.

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LESS WATER AND SAFER BUILDINGS

Advance sheets from May "Fireproof Magazine" show the scope and improvement there has been in that lively journal that has done so much to awaken popular interest in the better construction of our cities. One of its most forceful articles is a stirring appeal by Architect Fitzpatrick, the chief officer of the Building Inspectors' Society (representing virtually all the principal cities of the world) to municipalities and individual owners to give at least as much attention to fire-prevention as to fire-fighting.

The writer describes the efforts and expenditures made by cities for increased water supply and wonderful fire apparatus, while more and more fuel is constantly being added for possible conflagrations to consume. It is made quite evident that a much less effort in the right direction, the compelling of fireproof construction in all new buildings and the re-vamping of the old ones so as to make them less combustible, would soon effect a much lessened expenditure for fire-fighting appliances and insure greater safety to life and property.

No country on earth tolerates such fire losses as we do; we have permitted to be destroyed over a billion dollars' worth of property in six years; our normal fire loss is a million dollars a day; the average city of three to five hundred thousand people is lucky when the year's fires do not net $500,000 damage, while in Europe cities of similar size feel terribly stricken when more than $50,000 represents the year's loss. Mr. Fitzpatrick's appeal through the press is but a reiteration of what he has so persistently preached to our city officers. Much good has resulted from this work, virtually hundreds of cities having revised and improved their building ordinances, but there is yet much to be done and it behooves all intelligent municipalities and thinking individuals to listen to and follow the advice of this keenest of observers and most public-spirited of experts.

FIRE AND CRIME

In normal years our fire losses reach $200,000,000; with a fire like that at San Francisco the total 000; the International is increased to $500,000,- Society of Building Commissioners, that naturally keeps most accurate tally of such matters, is authority for the statement that our losses so far this year have reached $1,000,000 per day, and some Government statistics just issued give us the startling news that of that great fire waste fully $100,000,000 per year is accompanied by crime. Fire is but the result of poor construction and negligence, and, involving human life and others' property as it does, such negligence is criminal, but the criminal feature referred to in these Government figures is still more direct. It is claimed that that enormous loss in property is caused by people deliberately setting fire to buildings, active incendiarism, either to secure resultant insurance indemnity or to conceal other crimes.

It would seem that one aspect of the case would be sufficient to induce municipalities and individuals to build better, thus necessitating lessened insurance, a removing of the temptation to acquire it and making it impossible, by reason of better construction, to burn buildings.

TERRA COTTA TAKES PLACE OF SANDSTONE

Glazed terra cotta is being adopted very extensively by San Francisco architects as a substitute for stone. It is light, as fireproof as anything, and can be handled speedily. Glazed terra cotta has been found to be absolutely impervious to moisture and is easily cleaned of any dust that may adhere to the surface. In fact it has all the favorable qualities that stone has not. Architects were bitterly disappointed with the way sandstone passed through the earthquake and fire. The shake caused the big stones to crack badly while the heat of the fire made the stone crumble and break apart like so much dirt.

Glazed terra cotta can be had in all colors so that the most beautiful coloring effects may be obtained in a permanent way that leaves no guessing as to the future results.

NEW PLAN FOR ARCHITECT'S COMPENSATION

While it is generally held that the architect receives less for his services than is his due, there is not the same uniformity of opinion concerning the fairness of a commission basis for his remuneration. Some argue that a lump sum would be more equitable. A variation on the lump-sum plan has been found to work very satisfactorily in practice, both by the owner and the architect. This provides for the establishment at the start of a fixed price as the cost of the proposed building. The minimum price to be paid the architect is also fixed in advance. This may be a lump sum determined on a basis a little under the Institute schedule, say of 4 per cent.

A further agreement between the owner and the architect provides that the latter is to receive, as additional compensation, a commission of 10 per cent upon what he saves the owner on the cost price as fixed in advance. One architect's returns under such an arrangement equal 7½ per cent of the final cost of the buildings, and the owner is satisfied that he builds at a price appreciably less than would be possible under the usual plan. Probably this arrangement would not be equally satisfactory for all classes of buildings. The Inland Architect says it has been found to work well with such buildings as factories and warehouses, classes where it is not difficult to fix in advance a fair cost price, nor to readily detect as the work progresses inferior workmanship and materials.

An important consideration in such a plan, of course, is that the owner must have absolute confidence in the integrity of his architect, and feel that the effort to save will not be at the expense of good construction.

The Publisher's Corner

To Make Specialty of Cabinet Work

The Inlaid Floor Company has enlarged its factory and added new machinery with a view to specializing high class mill and cabinet work. The plant has been equipped with the most improved electrical machinery, in addition to a dry kiln and a complete steam heating plant which insures satisfactory work. Architects and contractors are advised that orders for sticking, shaping, band-sawing and turning will be executed with promptness at reasonable figures. The company carries on hand a large stock of kiln-dried oak, mahogany and other hardwoods.

The company has lately built a handsome hardwood sideboard for H. C. Holmes and it has been installed in his new residence on Buchanan street in San Francisco. Practically all the hardwood finish for the several cigar stores of the United Cigar Company, planned by Architect Albert Farr, was turned out by the Inlaid Floor Company, as was all the hardwood finish in the handsome cigar store of G. E. Bier on Mission street.

Watson Roof Company Busy

The W. J. Watson Roof Company is rushed with work. This company is the successor to the roofing department of the Pacific Refining and Roofing Company, a pioneer in the roofing business in San Francisco. Since the fire Mr. Watson has personally supervised the management of the company and that he has met with abundant success is evident by the business the company is doing. Among the large contracts taken recently is the roofing of the Alexander Hotel; also the Viavi building, the Marston building and the Pacific Grand Hotel.

Big Demand for Edwards' Fire Proof Windows

The A. C. Rulofson Sheet Metal Works have the contract for furnishing the new Humboldt Savings' bank with "Edwards" fire-proof metal windows and frames. It is gratifying that local manufacturers have grasped the situation and equipped themselves with all the modern appliances for making metal windows, which is a new industry on this Coast.

The contract for this work was awarded to the A. C. Rulofson Sheet Metal Works in competition with the largest Eastern manufacturers, and they were awarded the contract on account of the superiority of the local product, which speaks well for our home industry.

The same company is installing the "Edwards" metal windows in the "St. Clair" and the "McGregor" buildings, being erected by the Boyd Estate, and many other structures being put up in the new city.

To Install Heating Plant

The Machinery and Electrical Company will install the heating and ventilating system for the Security Savings' Bank in the Security building at Fifth and Spring streets, Los Angeles.

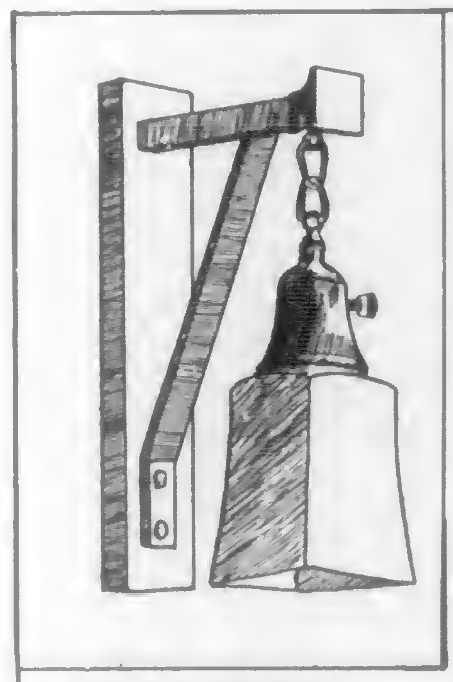
Harmony in Home Furnishing

It is a recognized fact that within late years a great deal more attention has been given to harmonizing not only the color schemes in house decorating, but in the designing of the room furnishing and furniture, following more closely the principal architectural features of the building.

The Beach-Robinson Company of San Francisco and Oakland has made a careful study of this class of work and is not only designers and manufacturers of furniture made with a view to bringing about an harmonious effect between the architectural feature of a room and its furnishings, but is also one of the few concerns on the Pacific Coast that are direct importers of French, Italian, German, English and Oriental floor coverings, wall coverings and upholstery goods. They are the only Western representatives for the world famous Aubusson carpets and chair backs and seats. Parties contemplating furnishing their home with foreign tapestries and like materials need not now go abroad for these things.

San Jose Architects Busy

Architects Wolf & McKenzie of San Jose have quite a little work in their office just now. They have the new county hospital costing $86,000; a brick building costing $30,000 for the Walsh-Cole Company, wholesale grocers, a $30,000 cannery at Sunnyvale; a $10,000 residence for J. H. Platte at First and Hobson streets; a $12,000 residence for William Bogan of San Francisco, now in course of construction on the Alameda in San Jose; a hotel in Sunnyvale for John Ryan and an apartment house in Sunnyvale for E. L. Roberts.



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General View of Joshua Hendy Iron Works, Sunnyvale, Cal.

The Hendy Company's Great Plant

Little more than a year ago the Joshua Hendy Machine Works were destroyed in the great San Francisco disaster. Soon after it was decided to erect new and larger works at Sunnyvale, in Santa Clara County. The pattern shop was in operation by the first of November, the foundry by the first of January, 1907, the machine shop and other shops by the first of February, and today the whole plant, with its magnificent equipment of modern, up-to-date tools, is running full blast. Some idea of the extensive nature of the buildings and yard can be gained from the accompanying photographs.

The old firm of the Joshua Hendy Machine Works, incorporated in 1882, on September 11, 1906, was merged into a new corporation to be known as the Joshua Hendy Iron Works. The new company has a capital stock of $1,000,000, and has erected at 75 Fremont street, just half a block from Market street, San Francisco, a fine two-story office building, the first one of a permanent nature in that part of the city. It has a frontage of 91 feet, and contains a show-room whose unusually large floor space is well stocked with engines, boilers, hoists, and other classes of mining and accessory machinery for which the house is so well known.

The works at Sunnyvale cover about twelve acres of land, thirty additional acres being held in reserve for future extension. The main buildings form a

Showing Switching Facilities and Portion of Main Foundry, Joshu Hendy Iron Works, Sunnyvale, Cal.

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The Humboldt Bank Building occupies a lot on the south side of Market Street about 100 feet east of Fourth Street with a frontage of 50 feet on Market Street and a depth toward Stevenson Street of 170 feet. The main front on Market Street is to be seventeen stories high with one or two stories in the dome in addition. To plan a water system for a building of this kind, required engineering skill and broad practical experience. We offer you both: and we will make no charge for preliminary estimates, prices and plans.

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quadrangle, in front of which and facing the railroad tracks stands the office and administration building, whose quaint Mission style, with rough cement finish and red tiled roof and cupola make a pretty and effective contrast to the surrounding orchards. A splendidly-equipped and well-lighted draughting room occupies the southeast end of the building, and at the northwest end are the equally well-arranged offices for the staff.

Directly back of the administration building is the main machine shop, which is 420 feet long and 80 feet wide. It is equipped with a 20-ton Niles traveling crane, electrically driven. It is also equipped with independent electrically driven tools of the most up-to-date types.

The foundry building is 256 feet long by 80 feet wide, is also equipped with an electrically-driven Niles traveling crane, and has two cupolas with a capacity of from fifteen to eighteen tons per day, which can be increased according to demand.

The main blacksmith shop has a most complete equipment, including steam hammer, forges, furnaces, and all the usual small tools. The boiler shop and steel plate working department, where ore cars and other similar manufactures are produced is also furnished with pneumatic riveter, punches, shears, and other modern tools.

The main yard tracks which connect with the railroad siding of the Southern Pacific Company pass through the main machine shop at right angles, the entrance and roof at this point being sufficiently high to admit of the locomotive cranes passing through the building from the main yard to the Southern Pacific siding, which is a great convenience and facilitates the handling of heavy machinery.

The yard has two main lines of standard gauge track with branches and switches to the various buildings. The steam-driven locomotive crane enables as many as four or five standard railroad cars to be hauled from the siding to any part of the works and readily loaded or unloaded.

A very important factor in the erection and equipment of this plant are the precautions against earthquake and fire, the general arrangement being such as to insure the greatest safety possible. A steel tank 70 feet in height is kept filled with water, and is connected with mains throughout the entire works. Independent high pressure electric pumps have

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COUNTING THE COST

To the Editor The Architect and Engineer—It should be obvious to the thoughtful citizen that labor unions have no monopoly of strikes. Capital, weary at last of labor's excessive demands and of the present prices of building materials, seems to have gone on strike itself. "Financial stringency" but meagerly describes the existing conditions. There is plenty of money, as much as there ever was, and California's resources are practically illimitable, but a halt had to be called on the reckless methods and reckless expenditures which have obtained so largely since the disaster of April, 1906. Extraordinary events of course, precipitated extraordinary conditions, but the abnormal phase could not continue forever, and the day of reckoning has arrived.

The crisis, which for some months had been looming on the horizon, was apparently precipitated by the various strikes commencing about May 1, the chief and the most distressing of which, because of general inconvenience and injury, is the strike of the Carmen's Union.

Mr. Calhoun of the United Railroads accepted the gauntlet thrown down by the Carmen's Union. Yet he was ready once more to submit the men's grievances to arbitration and although the constitution of the Carmen's Union ordains that it shall seek arbitration before a strike, Mr. Cornelius—and without Mr. Mahon's veto—called the men out. The result has been extraordinarily vexatious to the third party to all such strikes—the passengers or consumers. Retail business has been paralyzed, various enterprises have been frustrated or postponed, and the banks have adopted the most stringent policies of non-accommodation. Business is dull, money is tight.

Conditions are serious enough now, but of the morrow none dare prophesy, either for labor or for capital.

The truth is that the reign of universal prosperity has all too suddenly been deposed.

The abnormal conditions that have obtained since the disaster could not continue forever. The cost of living and of building must be reduced, and business restored to a normal basis. It is quite impossible for San Francisco to continue putting up buildings, for from 20 to 40 per cent more than the same buildings would cost in other cities of the same size. The truth is, that the carman's wife is not the only one who cannot afford "a silk gown and matinee tickets" all the time. Extravagance has been the rule dominant of the twentieth century and San Francisco as usual has lead. In fact the majority of men in all walks of life, if the truth were known, have been living on a larger scale than their true earning capacity, if not their incomes, warranted.

Both capital and labor must come to their senses and in the words of the late Mark Hanna: "Yield to the great law of fair dealing between man and man. ......I am sure that the American people will sustain a policy, based upon the highest moral and social impulse, which will eliminate the passionate prejudices that now exist between capital and labor."

"Life," wrote Senator Hanna, "is a matter of mutual interest between labor and capital; it is not possible for one to prosper permanently unless the other shares in that prosperity."

Had Mr. Hanna been spared, the work of the Civic Federation and its simple motto, the Golden Rule—the united effort of the general community which desires to avoid the disordering of its business and transportation—doubtless would have been far more prevalent and efficient. The Civic Federation opposes the sympathetic strike, opposes the boycott, disapproves of the restriction of production to enhance values, and urges, as a sure foundation for capital and labor, absolute confidence on both sides.

It should be hardly necessary for a writer in The Architect and Engineer to point out that organized labor has made excessive demands during the

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last twelve months in San Francisco. But a few instances may be of value. The cost of brick in the wall is $25 to $30, per thousand, while in other cities of equal size the cost has been from 33 to 40 per cent less for the same work. Our union bricklayers decry a $7.00 eight hour day—$8.00 or more for eight hours is what they want—and expect to get, while the number laid is in an inverse ratio as compared to the wages demanded.

Who now dares to guarantee first-class reinforced concrete building construction on a basis of 16c or even 20c or 24c per cubic foot of contained space? How many Class B. buildings have been constructed within the estimate during the past year? How many have been built that did not cost more than 25% to 40% above the original estimate? Some have cost 100% more than the estimated cost and what has the owner to show for the excess of money invested? Can a rental rate be saddled onto financially reliable and permanent tenants that will permanently produce adequate returns on this "watered" cost? From $1.92 to $2.50 per square foot per year of office floor space can be obtained for modern offices in modern buildings with up-to-date conveniences and service, and most office space must rent for far less although an occasional choice location may bring more, but the ruling rate can be no more here than elsewhere, and in all other cities this rule holds. San Francisco office space never was nor will be higher than similar space in similar cities, once the demand occasioned by the fire is supplied. The same holds true as to lofts, warehouses, wholesalers' locations and in fact all property of this nature except some financial institutions and certain retail concerns who seem able to pay whatever becomes necessary to get the location they want. Such being the case, who is going to make good to the owner of buildings that cost so much they cannot possibly earn a fair return on the money invested? The answer is—capital can wait—it neither sews nor spins nor does it have to eat or pay rent for being housed—so is can wait indefinitely.

So if the returns of the proposed investment are plainly inadequate to warrant the outlay, then neither will banker loan nor owner build and the result is what we are now facing.

The increase in the cost of building material has been decided. Lumber went up—it has also been coming down. Other materials are lowering but it is to labor that the greatest advance has been made—by the shortening of hours and the increase in pay, and if organized labor can bring it about, the end of the advance is not yet. While a reduction is not yet even considered. The cost of living is given as an excuse in many cases but aside from a very decided increase in rental demands for residents and flats occasioned by fire and which can be but temporary, (even now there are many "for rent" signs up), the cost of living as represented by the cost of food products is rather less in San Francisco and the trans-bay cities than in cities of corresponding size elsewhere in the country. Meats cost less here. Flour and other staples about the same. Fruits and vegetables decidedly less, in fact very few things that are generously bought cost more here, even to the extent of the freight paid for their transportation from the East. Thus it would seem that all the talk about high living is not borne out by the facts—when facts are adduced. Much is heard about the "San Francisco standard of living." which is supposed to call for an expense considerable in excess of that required in less favored sections of the country. If the San Francisco standard of living demands excess pay to the extent of seriously delaying the rebuilding of the city then the standard would seem to be a false one or else misunderstood.

Perhaps this so called "standard of living" is to be a new excuse for the violation of law? Is is to be added to our other "unwritten laws"? Are we to have it appealed to in the passionate pleas to juries and hinted at in Sunday sermons and "played up" in the "yellows"?

The crisis that confronts San Francisco today is not merely industrial and economic; it is of vital social significance and of instant menace to every citizen. In an editorial the Argonaut recently maintained with much truth:

"When, in the course of conflicts like that which now convulses San Francisco, there is violent interference on the part of strikers, government must step in to sustain the right of him—call him scab, strikebreaker, or any other term of opprobrium if you will—who elects to work. Government must maintain the law, since otherwise its own mandate would be lost. A government incapable or unwilling to sustain the law to support citizens in their right to work, would, as we have hitherto declared, be no government at all; it could not live, because it could serve no purpose, and society would not support it. Outside of its duty to maintain the law and the right of every citizen under the law, government has no mandate. The striker, seeing another take up the work

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he has lain down, seeing him protected in it, is forever complaining that the law gives its favor to the "scab." He is wrong—stupidly, pitifully wrong. Government is on the side of the "scab" only in so far as the "scab" is within his rights; and so long as he remains within his rights it must support him.

Force of arms may no longer win labor controversies in civilized countries without swift and sure punishment. If the commonwealth, through its officers, fails to enforce order and protect those who interfere and by force or fear compel a cessation of work—then that commonwealth instead of the guilty individual will merit and get the punishment itself, swift and terrible. Labor controversies are won these days by public approval or lost by public disapproval. The right to work for whom you will and for such wage as you may see fit to accept would scarcely seem to be open to question by any thinking person. Guaranteed by the constitution of the United States the protection of the law is given to those who live within its pale. Either the law governs or else government, law and the entire fabric that civilization has been erecting these hundreds of years is a vain thing and the Red Flag period is indeed here.

The Argonaut editor further says:

"We must destroy the system which is strangling us or it will destroy California. To organized labor as we have had it here and in the shape in which it still urges its pretensions, we must deny the privilege of going one step further. More than this, we must beat it back from the place it holds at the front of our affairs; we must unhorse it at the point of its social and political usurpations; we must force it to take its proper place in the scheme of social order."

We do not think it is necessary to destroy to build up in San Francisco. We have had our fill of destruction in the past fourteen months—let's omit that!

What is needed is to curb and direct not only organized labor but a few—yes at least a few—other things. There are more sensible, hard-headed, honest and reliable citizens among those who compose the organized labor ranks than there are of those who represent all the other classes in that strange body of men and women. The trouble is they are mainly in the ranks, unused to hustling on union matters and disposed to leave affairs entirely with the leaders.

The fact asserted that Mr. Calhoun may have received substantial benefits from a corrupt Board of Supervisors does not in the least grant to organized labor or their friends collectively or individually, no matter how deep their sympathy or community of interest, any right or privilege, no matter how small, to injure, damage or destroy the property of the United Railroads or to interfere with those persons who desire to work for that corporation or the people who may wish to ride on the cars of the company.

Mr. Calhoun's right, under the law, to pay such wages as his best judgment dictates, is incontrovertible and should be inviolable. If the present disgraced civic administration cannot protect the property of the United Railroads and citizens from molestation and our women from insult, it becomes the duty of Governor Gillett to intervene and with state troops if need be, enforce the laws.

The fact of the city suffering from the chaos reigning in its civic departments is as apparent as the devastation of the burned district was one year ago, and there never was a more unhappy time selected for this strike. Coming on so soon after the other, which so plainly put the carmen in the wrong there can be but little doubt as to the attitude of the general public. The free use of the cars proves this. The matter of police protection has been so quickly disposed of that no one longer asks "can they protect"? but "will they protect"? They have shown how readily they can if the orders to them are right.

These carmen who say they are not drawing the wages of a hod-carrier are the first to lose their battle. By comparison with the extravagant wages of the Building Trades no doubt they believe that they were not getting a just return for their labor, yet they were getting far more than the average of their class in this country. But there is where this strange "San Francisco standard of living" plea comes in again.

Is San Francisco to erect a protection wall all of its own around itself, buttressed on the shoulders of organized labor? To be paid for by capital which can never hope to make a fair return from its investment (so costly would this protection wall make it). A special and peculiar protection that refuses admission as "unfair" to goods made in union factories and shops in other states by union men for union wages,—paying union dues to the same union, and union men here refusing to use their goods for why? "Well they don't cost as much to make as the same goods would if made here and we must protect home industry in order to permit the high standard of living necessary in San Francisco."

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Wells Fargo Nevada National Bank
OF SAN FRANCISCO
Union Trust Building, No. 4 Montgomery Street
Capital Paid Up - - - - - - - - $6,000,000.00
Surplus and Undivided Profits - - - - - 4,584,805.19
Total - - - - - - - - $10,584,805.19
DIRECTORS:
Isaias W. Hellman
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Leon Sloss
C. DeGuigne
Dudley Evans
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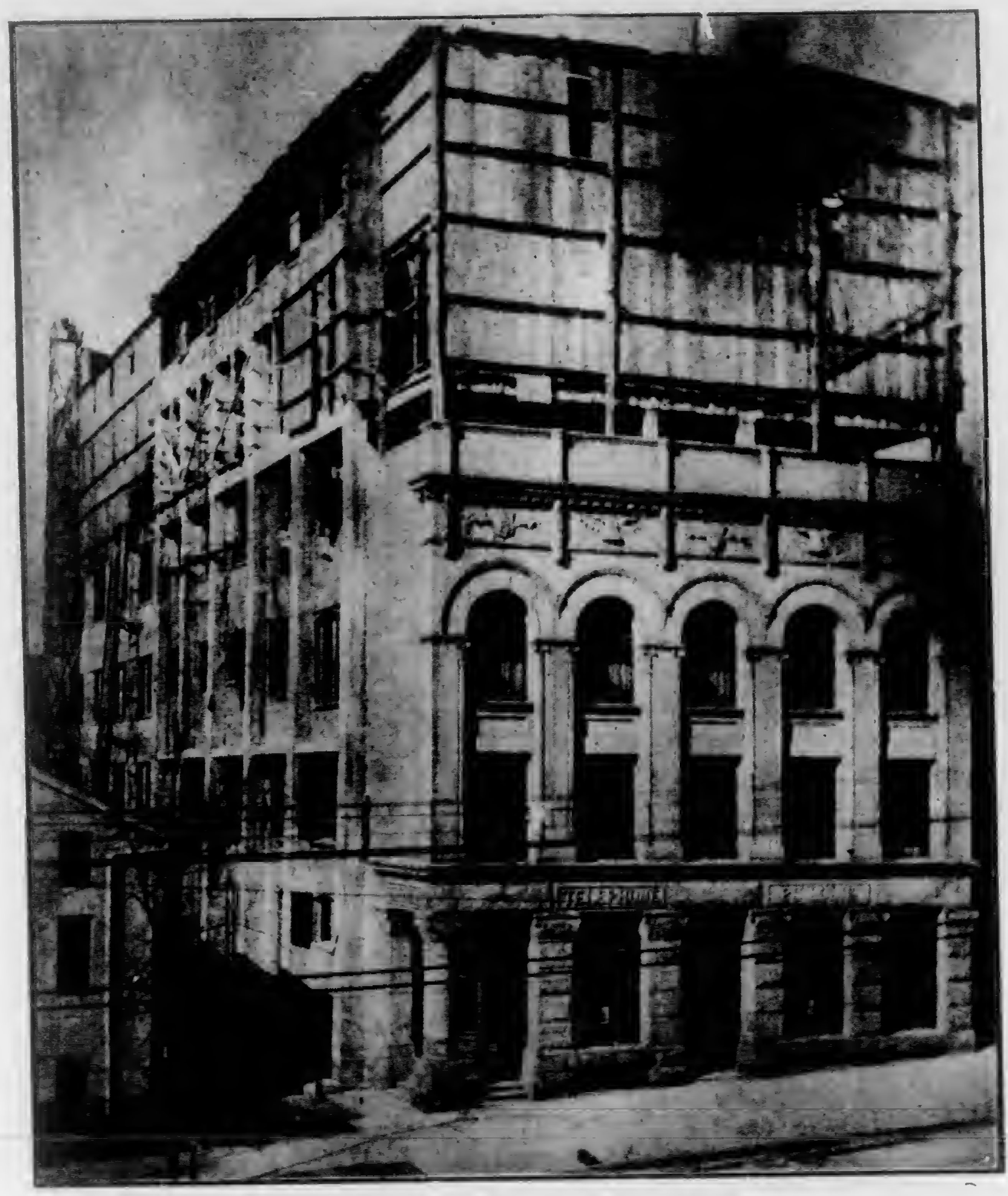

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An Existing Brick Building Built Around and Over and Added to in Reinforced Concrete. A Difficult Engineering Job. L. J. Mensch (The Concrete Company), Structural Designer and Builder.

As well may the sections of this country that buy our fruit refuse it for the reason that "California has more sunlight and can raise it cheaper than we."

The test of California's fairness and her fitness to be the goal of the home-seeker is to be made in San Francisco during the next few weeks and from the result of the test the State will be judged by the rest of the Nation.

No fiction of the existence of a special "standard of living" can carry weight with the thinking public any more than they will believe there is greater need or more excuse for "French Restaurants" of the unsavory type in this city than any her fitness to be the goal of the home—places figure in this standard of living?) The people are not to be fooled continuously in these matters.

If union labor can come to its senses and reduce the wages to rates that are within reason the town can remain prosperous in the face of general depression and its membership will continue to find work in plenty. But if the desires of certain elements now apparently in control, are carried out, building, together with other improvements will practically cease and San Francisco will remain at a standstill until necessity brings forward other labor and creates new conditions not to be in any way controlled by the present labor leaders, if by labor leaders at all.

X.

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Marine, Accident and Plate Glass Insurance Company

Of Frankfort-on-the-Main, Germany

Established 1865

Capital - - - - -	$1,250,000.00
Deposited in the United States -	200,000.00

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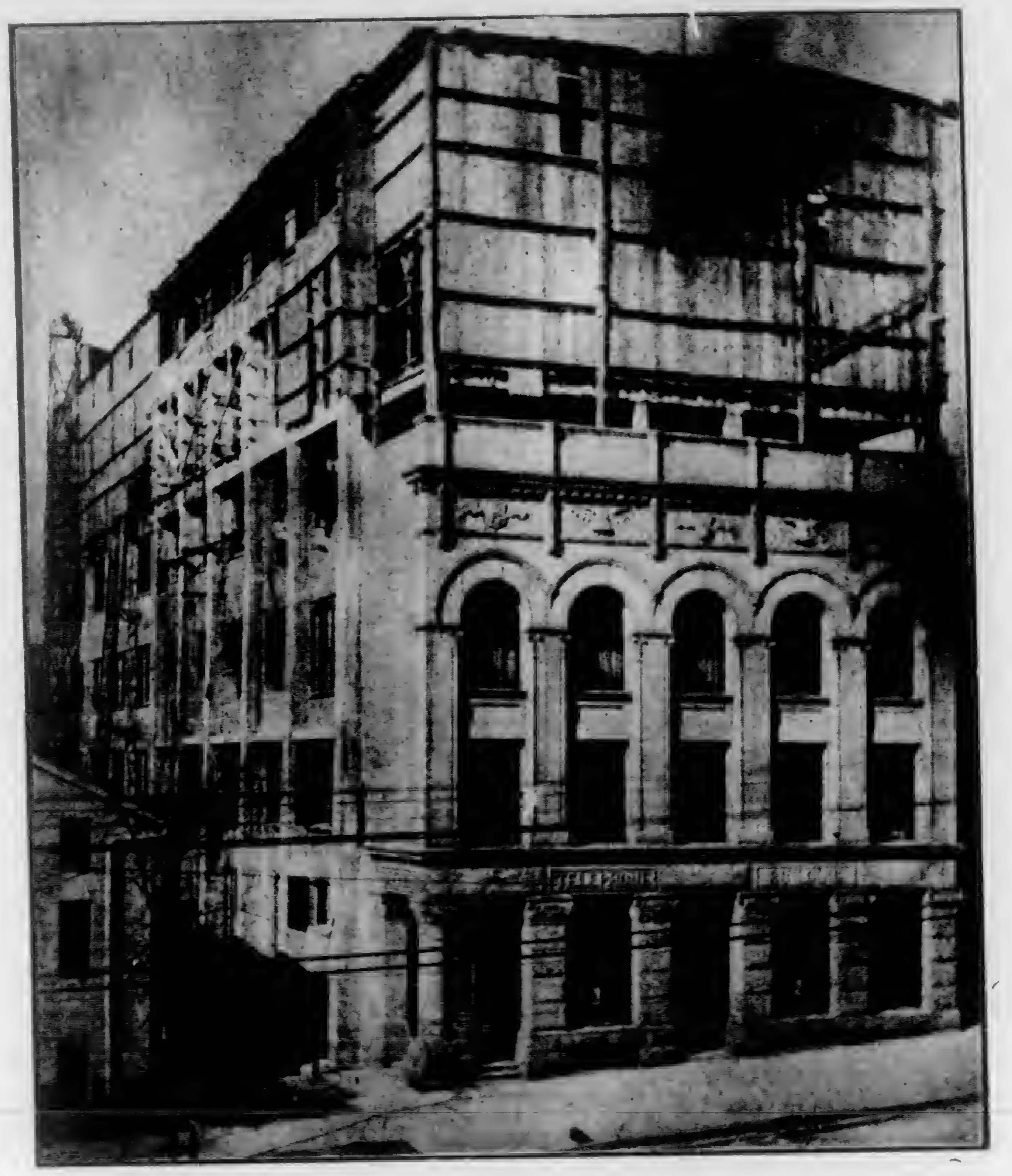
SAN FRANCISCO, California



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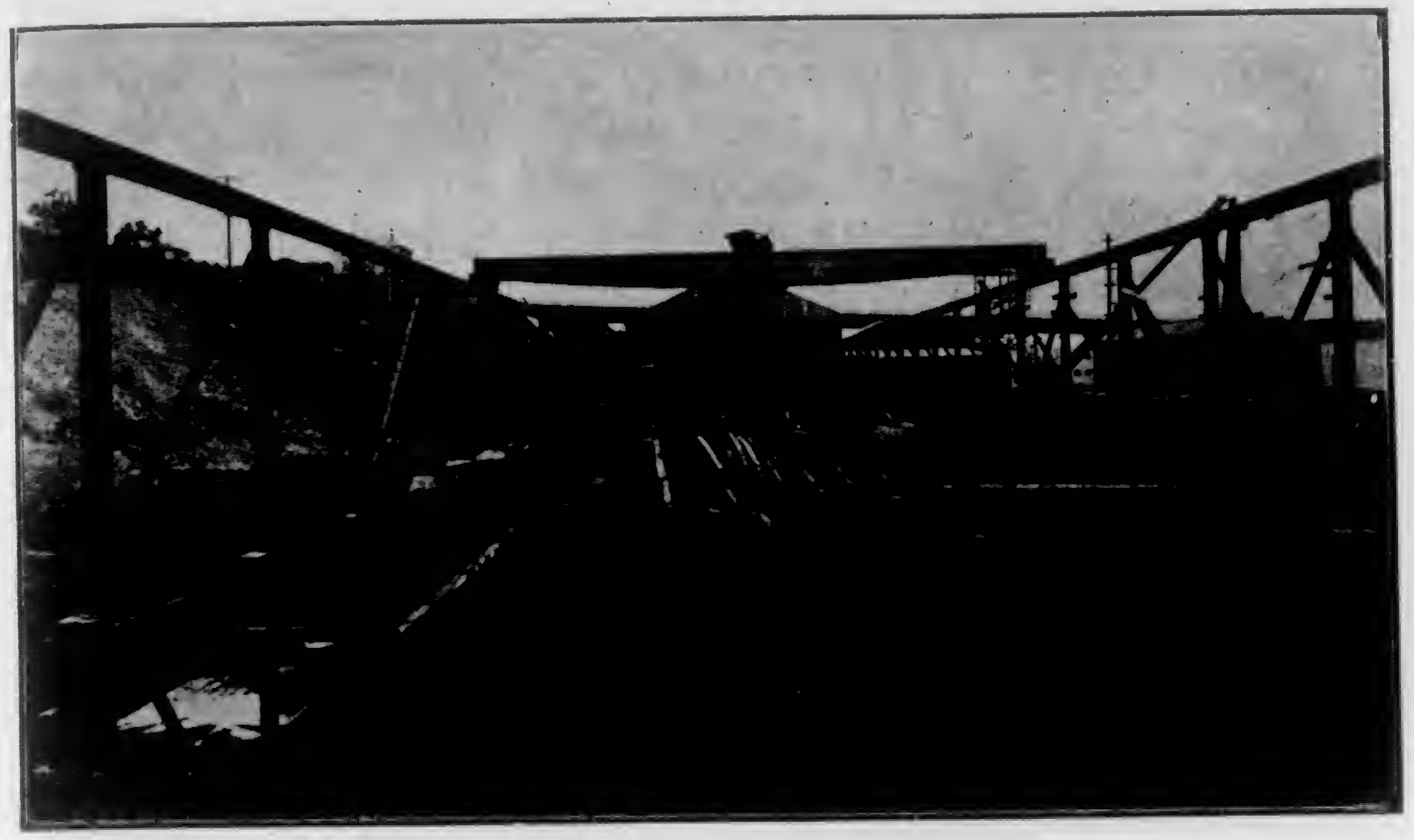

Ralston Iron Work's Big Crane and Stock Yard

Heating a Modern School Building

In the heating and ventilating of school buildings the California practice has been to a large extent the use of the Sturtevant Plenum Pressure System of ventilating in connection with the furnace system of heating, in which the air is forced over furnaces or air warmers, having extended heated surface so arranged that large volumes of air may be thoroughly heated without super-heating and vitiating any portion of the air. This last requirement, that is, that no air should be superheated, is of primary importance, as super-heating de-oxygenizes the air and leaves it thoroughly vitiated to be mixed with other volumes of fresh air. The machinery and electric company. of Los Angeles have used almost exclusively cast-iron furnaces, so arranged as to have the minimum number of joints, and at the same time to have the parts so designed as to relieve all expansion and contraction strains so as to avoid breakage, or warping.

These furnaces have extended ribs disposed radically so as to increase the radiating surface, and at the same time materially strengthen the structure without increasing the weight.

The particular field for heating and ventilating systems of this type lies in school buildings of moderate size so that the pipe runs are not so long as to permit of extensive radiation between the furnace battery and the rooms to be heated. Where the building covers a large area furnace heating reaches its natural limitation, due to radiation losses in the conductors.

The furnace method of heating is especially adapted to California, particularly because of the fact that very rarely is heat required during the entire day; as a rule a small amount of heat in the morning, and possibly for a short time in the afternoon is all that is required. The furnace system allows of starting up the plant, and delivering its maximum heat in a very short time after lighting the fires, much shorter than it would be possible with a steam plant where a large body of water would have to be warmed and converted into steam.

In the East where excessive cold requires constant heat during a large part of the school season these advantages are not nearly so marked in favor of the furnace system as in California practice. A very large preponderance of the school buildings on the Pacific Coast, especially from San Francisco south, are installed with some form of furnace-heating system. By reason of the direct use of fuel in heating the air to be warmed the thermal efficiency of the furnace system is exceedingly high.

From what has preceded it will readily be understood that in buildings covering a large area, or in situations requiring heat to be distributed in various places that the flexibility of a steam-heating system in connection with the Plenum System of Ventilation commends itself at once to the architect and engineer. In large buildings of brick, or concrete

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GOODYEAR RUBBER CO.
61 to 67 Fourth St., Portland, Oregon 573 to 579 Market St., San Francisco

construction, the best practice usually provides for a well designed system of plenum ducts in the basement of the building, opening directly into vertical ducts of the proper size for reaching all of the rooms to be heated. The fans of the centrifugal pressure type are suitably located to maintain a constant pressure on the entire tunnel system, and heating coils are located in suitable groups to furnish the heat in the various groups of risers. Steam is supplied to the coils by way of the usual double-pipe systems, and where power plants are used in connection it is customary to use some one of the different systems of steam distribution to remove the air and condensation and avoid back pressure upon the engine units.

A good example of this type of plant is to be found in the Los Angeles Polytechnic High School, in which the heating and ventilating system and the power plant were installed by the machinery and electrical company after the plans of Architect F. P. Burnham, somewhat modified to permit the use of Strutevant coils and apparatus. In this installation the entire system was carefully laid out before the construction proceeded and extensive tunnels were provided making a complete plenum chamber. From this chamber the rising ducts connect, being built into the walls so that the minimum amount of galvanized iron work is required. Within the plenum chamber various groups of Sturtevant coils are disposed encased. so as to deliver the air over the coils and into the ducts whenever the automatic dampers reduce the pressure in the air ducts to permit of hot air being used. The entire system is installed with the Webster system of steam distrubution, and the temperature is controlled by the National System of Thermostats and dampers. Three Sturtevant blowers are installed, two of 140-inch and one 120-inch capacity, with their proper size heating coils. The amount of tem is approximately 80,000 cubic feet at full load.

Bids Wanted for Construction of Bridges

Notice is hereby given that sealed proposals or bids will be received by the Board of Supervisors of Santa Clara county, California, in their rooms in the Court House, in the City of San Jose, up to 11 o'clock a. m., of Tuesday, June 4th, 1907, for the construction of steel reinforced concrete abutments at the ends of the bridge over Los Gatos creek on Park avenue, in accordance with plans and specifications on file in the chambers of the Board of Supervisors.

Notice is hereby given that sealed proposals or bids will be received by the Board of Supervisors of Santa Clara county, California, in their rooms in the Court House in the City of San Jose, up to 11 o'clock a. m., of Tuesday, June 4th, 1907, for the construction of a steel reinforced concrete bridge on Hamilton avenue, over the Los Gatos creek, in accordance with plans and specifications on file in the chambers of the Board of Supervisors.

Pioneers to Build at Once

An application was made the past month by the Society of California Pioneers for a permit to erect a six-story hotel, Class C building, on the southwest corner of Fourth street and Pioneer place, San Francisco. The new building will be erected on the society's old site and will cost $350,000. The Lindgren-Hicks Company are the contractors.

The Pabst Brewing Company has applied for a permit to erect a six-story hotel, Class C building, on the northeast corner of Ellis and Powell streets, at a cost of $200,000.

Thomas Magee & Sons have made application for permission to construct a six-story Class C building on Geary street, near Market, to cost $125,000, from plans by Bliss & Faville.

Other applications were filed by Robert Dalzel, Mission street near Second, $50,000; Potter Realty Company, northwest corner of Battery and Sacramento streets, $44,000; A. D. Bretelle, Green street near Hyde, $11,000.

Some New Buildings

The Brignola Estate Company has begun the erection of a two-story and basement brick building at Sansome and Pacific streets. The Clark Construction Company are the builders. The latter company is also building a five-story brick structure for Kernan and Robson on Geary street, and a brick building on the south side of Sutter street for the Tillman estate.

College Buildings at Pacific Grove

The ground is being cleared on the site of the old Chinatown in Pacific Grove preparatory to the erection of buildings for the biological department of the University of California. Plans are being prepared by John G. Howard, architect. The buildings will represent and expenditure of $200,000.

Important Decision

In an elaborate decision handed down by the Supreme Court, the judgment of the Police Court of San Francisco in convicting E. C. McMannus of practicing his profession as an architect without securing a license is affirmed. The law was passed in 1901, and the suit was instituted in a friendly spirit to determine the validity of the law. It was contended that the law was unconstitutional, in that it granted special privileges and immunities to a certain class.

Another Carnegie Library

Architects Marsh & Russell have been selected to draw plans for a new Carnegie Library at South Pasadena. It will be built on the corner of Diamond and Center streets, of brick construction, 46x75 feet, and one story high. It will be modern in every detail.

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Plans for Western Pacific Terminal

Plans are being prepared in Chief Engineer Virgil G. Bogue's office for the ferry mole which the Western Pacific will build on the Oakland water front near the mouth of the estuary.

Contracts for building the ferry boats are to be let shortly, and there are good reasons to believe that Gould's engineers are contemplating entering San Francisco sooner than was anticipated. They admit that work is to be begun in a few weeks on their freight terminals in San Francisco, and the presumption is that the first work to be undertaken will be on the tunnels between Ninth and Brannan, and the next on the freight slips near the sugar refinery.

Track laying is being rushed all along the Western Pacific line. The tunnel at Niles, which is nearly a mile long, is half finished, and by the time it is completed the Western Pacific will be ready to run trains to San Francisco from as far north as Marysville. Orders have been given to rush the track laying work at Oroville, Marysville, Sacramento and Stockton.

Oakland Wants New City Hall

Plans for a new city hall for Oakland are assuming definite shape. At a conference of Mayor Mott and other city officials with the City Hall committee of the City Council, composed of Councilmen Pendleton, Everhart, Mullins, Baccus and Ellsworth, it was decided to have prepared plans for a building to cost approximately $2,000,000. The proposition to sell the present site and to erect the new building on some other property was also discussed, but no definite action in this direction was decided upon.

The building in which the departments of government are housed is entirely inadequate to the needs of the city, and besides this its tinderlike construction exposes the records of the city at all times to danger of destruction by fire. Only a few days ago it became necessary to rent space outside the city hall for the use of the City Assessor and the quarters of the other departments are rapidly becoming too small.

Compromises Suit

Alice McCone has compromised with A. F. Rousseau, the contractor, who she claimed had failed to construct a building for her according to their contract. She agrees to pay him $19,000 in addition to the $8000 already paid him and he is to tear down the building and reconstruct it according to contract.

Los Angeles Wants Cement

The Los Angeles Board of Public Works is advertising for bids on 1,280,000 barrels of Portland cement for use in the construction of the Owens river aqueduct. This will be one of the largest contracts ever let by the city. There are two items in the specifications, providing that the contract may be let to one or two bidders. The first calls for 30,000 barrels of Portland cement for aqueduct use. The second calls for all of the Portland cement required, not to exceed 1,250,000 barrels, exclusive of the aforesaid 30,000 barrels.

Depot and Office Building

It is announced in Sacramento that the Northern Electric Company, which is building a system of electric interurban roads to gridiron the Sacramento valley, has secured a long lease on a lot 150 feet square, bounded by Eighth street, Oak avenue, J and K streets, in the heart of the city, and that it will immediately commence the erection of a fine depot and office building. The tenants on this property have been notified to move out.

To Build Power Plant

Willows.—Albert Lindstrom. Charles Glenn and C. R. Wicks have succeeded in interesting capital in the erection of a large power plant at Stony Creek. It is to be ready for operation by the first of next year. The company will be known as the Snow Mountain power and light company. The plant will be located about three miles from Stonyford. The field of this company will be principally Yolo and Colusa counties. The capacity of the plant will be nearly 20,000 volts.

New Theaters for Northwest

Spokane, Wash.—C. E. Bray, of Chicago, personal representative of Martin J. Beck, of the Orpheum theatrical circuit, announces that the company will expend $175,000 on a new vaudeville house in Spokane this season, also that in the neighborhood of $1,000,000 will be invested in the five houses to be erected in Spokane, Tacoma, Portland, Seattle and Vancouver. Mr .Bray added that his principal has options on several desirable building sites and that upon his return from the Coast to Chicago the contracts will be closed and work begun soon afterward.

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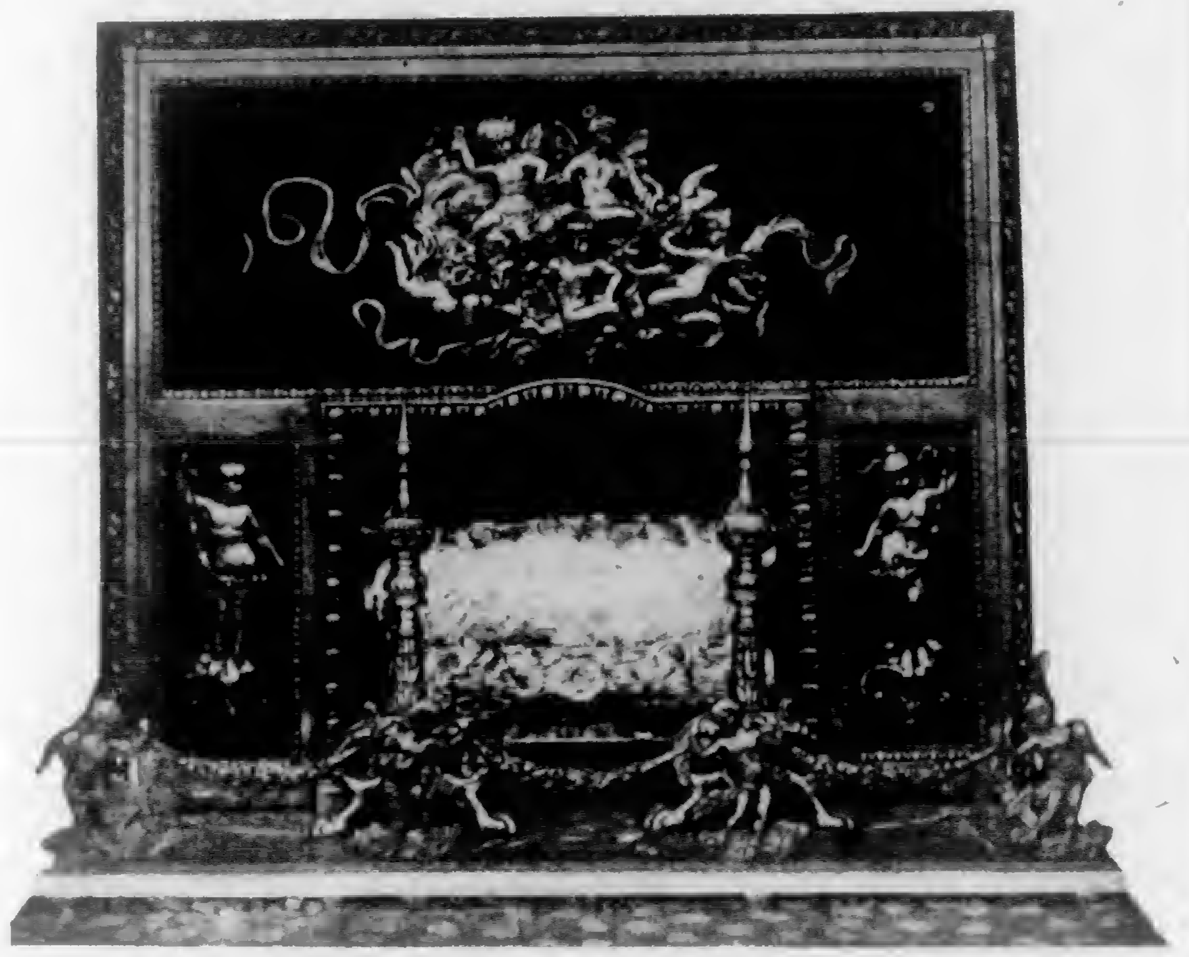

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been installed, and fire hydrants and connections for fire giants command all the important buildings, so that in case of necessity, an ample supply of water under considerable pressure can be obtained.

The plant as at present built, has provision for a force of about 400 men and is therefore one of the largest manufacturing plants devoted almost exclusively to mining machinery interests on the Coast.

Art Glass Windows

It is an undeniable fact that stained glass windows are becoming more and more a factor in residence decoration. Great strides have been made in this art and the results are plainly apparent in the magnificent designs that the various manufacturers of stained glass windows are now executing. One of these concerns is the San Francisco Art Glass Company, of 946 Mission street. Some of its recent contracts, especially for church windows, are decidedly beautiful in design and execution. The company has solved very satisfactorily the question which puzzled the makers of stained glass windows for years, namely, the reproduction of flesh tints. Mr. Johnson, the managing head of the company, has spent many years of experimenting to reach the results that have been attained,

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especially in the matter of flesh shades. The latter is obtained by the light being reflected through layers of glass of various tints, the combination of which gives a very life-like flesh color.

The vault window for Stockton, "The Goddess of Peace," is an excellent example of the class of work turned out by this house. A 12 by 16-foot window of "The Annunciation," for St. Patrick's Church, at San Jose, containing four figures and an immense amount of detail work, is another one of the many contracts that the San Francisco Art Glass Company has lately received.

Honor for San Jose Youth

F. Klein, a well-known San Jose merchant whose famous square furnace is is advertised on another page of the Architect and Engineer, is naturally elated over the success of his son, Julius Klein, who graduated from the State University a few days ago with the distinction of being the most brilliant man of his class. Since receiving his diploma his services as a student of history and economics have been called for by the Carnegie Institute at Washington. Klein, while at college, was given the title of "The Boy Wonder."

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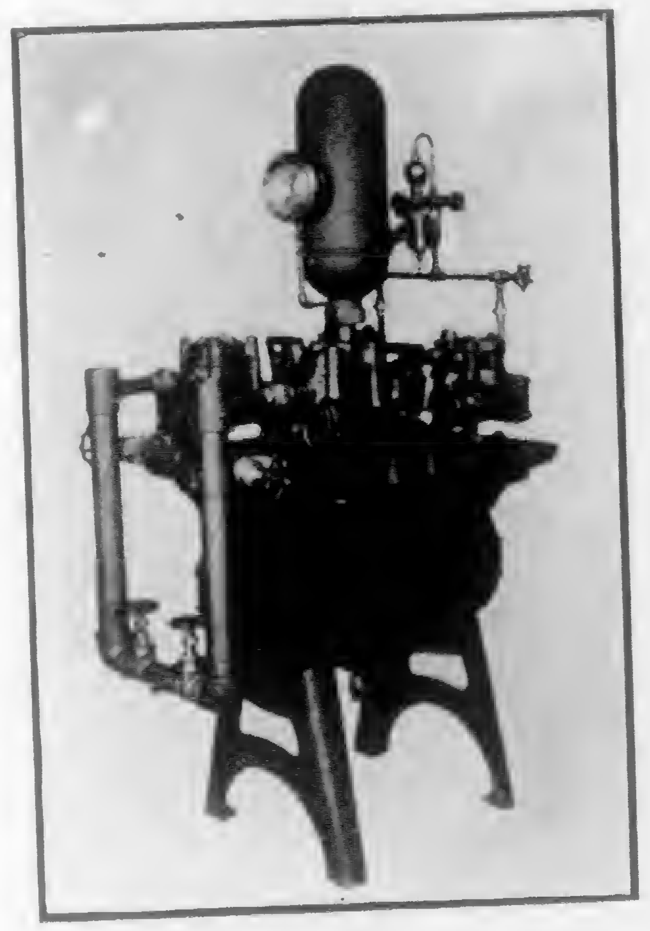

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Back to San Francisco

C. F. Weber & Company have moved back to San Francisco into large and handsome quarters at 1151 Polk street, near Sutter. Before the fire a year ago the company was located on lower Market street. Everything was burned by the conflagration and temporary quarters were procured in Oakland. An attempt was made to induce the company to locate permanently across the bay, but the opportunities in San Francisco were too enticing and the location of the city as a distributing point also proved an irresistible factor in determining the company's future course. A lease was secured of the entire second floor in the New Era building and this has been fitted up for the general offices and sample rooms of the company.

The company claims the distinction of doing the largest business in school furniture of any similar business house on the coast. It also specializes in theater chairs and church pews and seats. It supplied the seats for the new Orpheum, the Van Ness avenue theater, the Globe theater on Mission street and the new Alcazar. It furnished the furniture for the Congregational church at Post and Mason streets, the first edifice to be occupied in the burned district since the fire. The building is equipped with seating accommodations for 1000 persons.

The company occupies one of the largest warehouses in San Francisco, covering a space of 20,000 square feet. Spur tracks of the Southern Pacific run close to the building, which insures prompt shipment of goods.

Sidewalk Light Specifications

Messrs. John McGuigan & Co., the Sidewalk Light and Fire Proofing contractors of 1913 Mission street, near Sixteenth street, San Francisco, request us to publish the accompanying specifications for sidewalk lights, which they recommend to be the best at any price.

Specifications—

Sidewalk or vault lights are to cover spaces as outlined on plans.

The frames or bottoms to be of cast iron.

Frames to be properly set on the steel beams or concrete arches, placed for that purpose by other contractors.

All metal work to be painted on the exposed surfaces with two coats of white lead and oil.

Lenses to be 2½" circular, plain.

Concrete filling between the lights to be done in the most approved manner with the best materials.

All the work to be pointed up at completion and guaranteed watertight for one year.

If extra heavy plain lights are required then insert:—"lenses to be 2½" circular by 1¼" thick."

If part refracting lights are required then insert:—"lenses to be 2½" circular, one half plain and one half pendant, prismatic, refracting, placed so as to obtain the best results."

If all refracting lights are desired then insert:—"lenses to be 2½" circular, pendant, prismatic, refracting, placed so as to obtain the best results.

John McGuigan & Company, state that they have made complete arrangements to take care of the prospective demand for their line of goods, with especial respect to the above described sidewalk lights.

Solar Heater Patent Suit Won by The Solar Heater Co., of Los Angeles

In the United States Court recently Judge Olin Wellborn gave a decision in the patent suit of Charles L. Haskell of the Solar Heater Company of Los Angeles, Manufacturers of the Climax and the Improved Climax Solar Heaters, against the Rice Manufacturing Company of Los Angeles and Michael F. Cuniff of Riverside, in which he sustained the validity of the patent of the plaintiffs. Judgment was ordered for the plaintiffs and the injunction asked for was granted. The amount of damages for infringement will be adjudicated later. The suit has been pending for several months and many thousand dollars are involved. There are a large number of the solar heaters in use throughout Southern California, and the number is constantly increasing. The Solar Heater Company also have the right of the circulating system by which the Solar heater can be connected to an artificial heater so that in foggy, cloudy or rainy weather hot water can be obtained.

A New Vitrified Paving Brick Plant

Vitrified brick are rapidly coming into use as a material for surfacing streets and property owners are advocating their use in the place of asphalt.

At the present time there is an immense amount of street paving in contemplation and the adoption of this class of material for the purpose will be met by the paving brick manufacturers. The Simons Brick Company of Los Angeles has placed an order with an Eastern firm for a large consignment of machinery, specially built for the purpose, which they will add to their brick making plants.

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This often occurs if work on a wall, for instance, is stopped and later continued; the two pieces of work do not match in color.

Bay State Brick and Cement Coating as a paint or coating will make the concrete most pleasing in light and color effect.

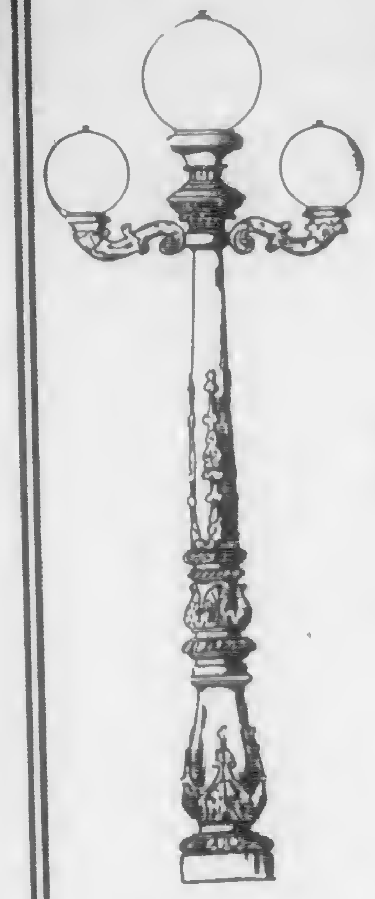
The Klatt-Hirsch Company of 113 Front Street, San Francisco, has taken the agency for Bay State Brick and Cement Coating, a special feature of which is its fire-proofing qualities.

It may be applied to brick, plaster and stucco work besides concrete and to cement floors where it acts as a filler and a surface finish, preventing all powdering of the cement, thus doing away with the dust that a cement floor always carries, and making a finish that may be washed without injury. It is sanitary, and at the same time a protection to the cement, and is easily renewed.

It is of great value where there is much dampness, as it does not peel and it keeps out the moisture.

ORNAMENTAL

Street Lights



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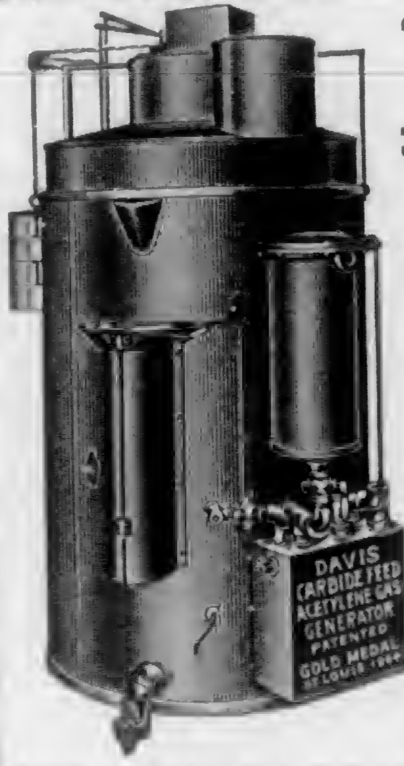
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Pumping Engines for Elevator Service

In view of the large number of elevators installations which undoubtedly will go into the new buildings projected for San Francisco, it may be of interest to Architect and Engineer readers to become familiar with some of the later designs in pumping engines suitable for hydraulic elevator service. In the East it has become quite universal to do away with the old compound direct acting pumping engine which, on account of its low economy, is so expensive to maintain, not to mention its poor regulation, and to substitute for this, either a cross compound Corliss pumping engine or a three-cylinder compound Corliss pumping engine. In the latter case there are many advantages over the two-cylinder compound. The three-cylinder type is best adapted for elevator service, owing to its great flexibility and its absolute self-starting features, which allow a uniformity of water flow with a resulting freedom of discharge lines from pulsation that is so essential for first-class elevator service.

The three-cylinder engine is practically noiseless, which is a very superior feature in large buildings, where all sounds are easily transmitted. Because of the shorter intervals between starting points and the higher steam cylinder ratio permissible an engine of this type is completely self-starting without excessive receiver drop and without curtailing the number of expansion available.

With a cross compound fly-wheel pumping engine and both of the engines mentioned above are of the fly-wheel type, the minimum flow is only about 54% of the maximum, while in the three-cylinder type, the minimum is about 74% of the maximum, which has a very great effect on the noiseless operation.

The engine frames are designed after the rolling mill or heavy duty type and the whole machine is put up in a first-class manner, which is so necessary to continuous operation; and with all, this engine occupies less pace than the ordinary cross compound crank and fly-wheel pumping engine of equal capacitv.

On another page is shown a cut of one of these engines, also a list of some of the buildings in the East where they are in use, and at all times the manufacturers will be glad to furnish specifications and estimates on this type of machine, knowing full well that any purchaser will be amply repaid for the slight difference in price between this and the cross compound type. The engines are manufactured by the Platt Iron Works, whose Pacific Coast office is in the Monadnock Building, San Francisco.

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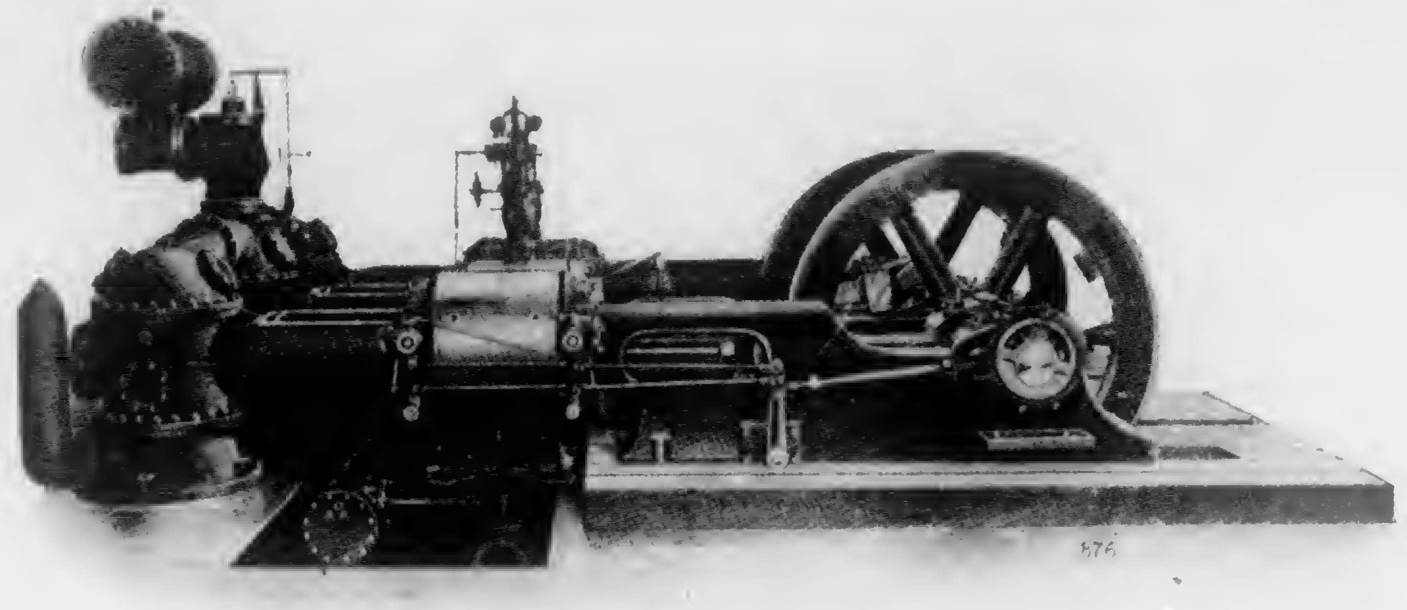

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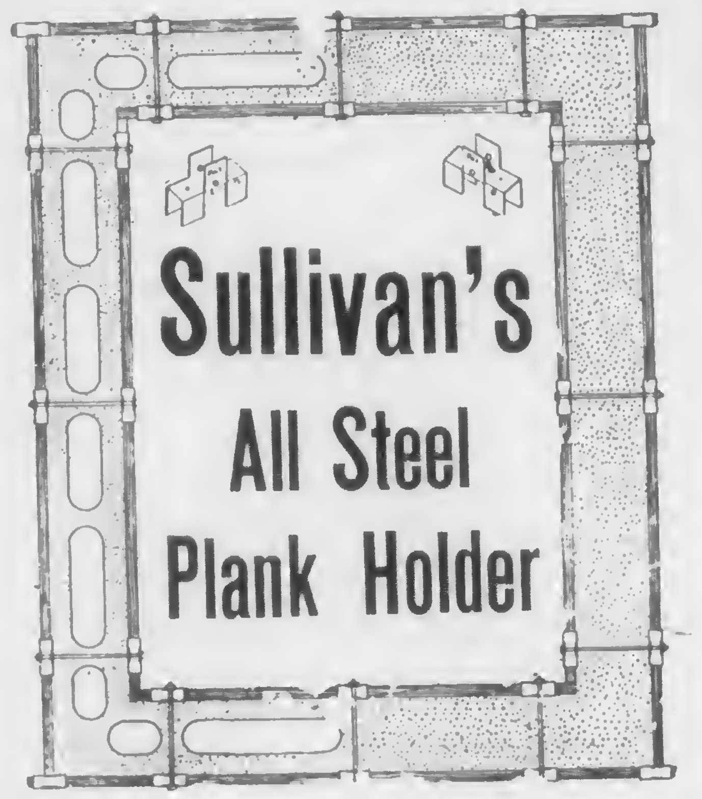

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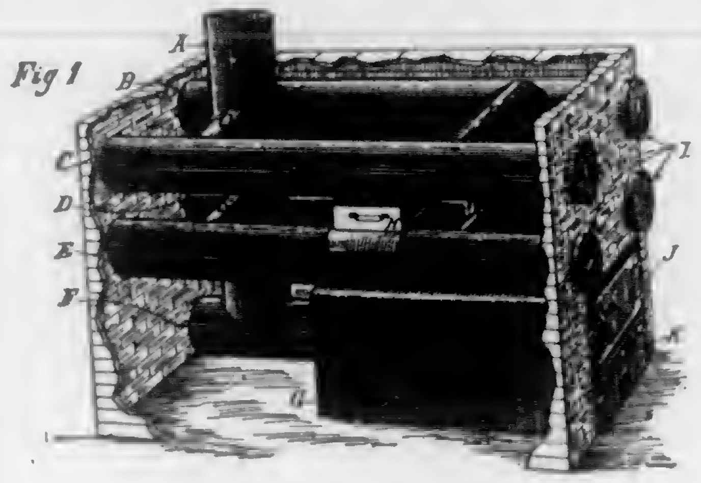

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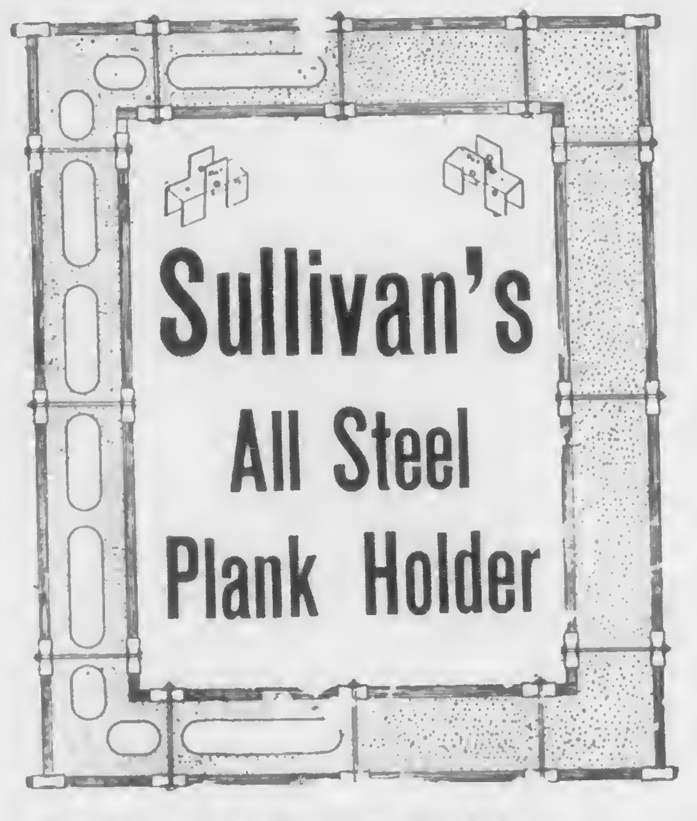

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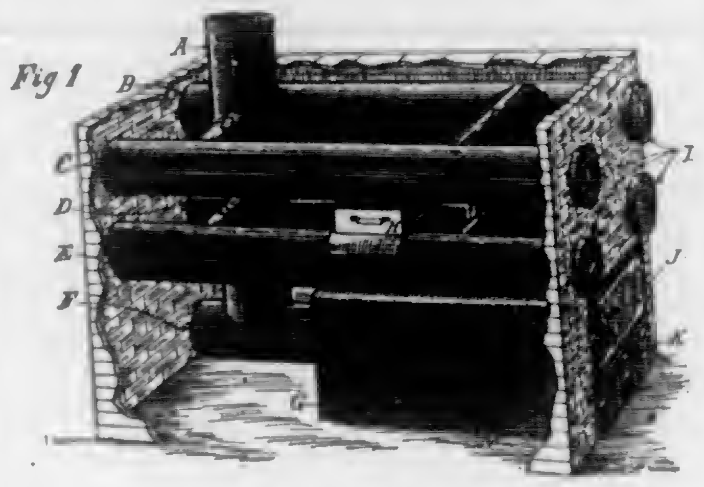
Fig 1



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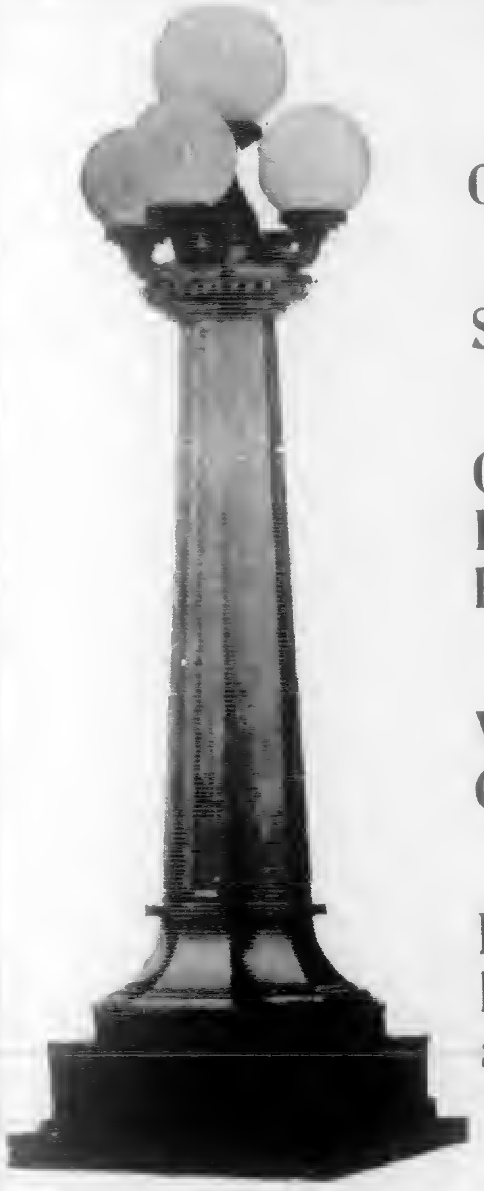

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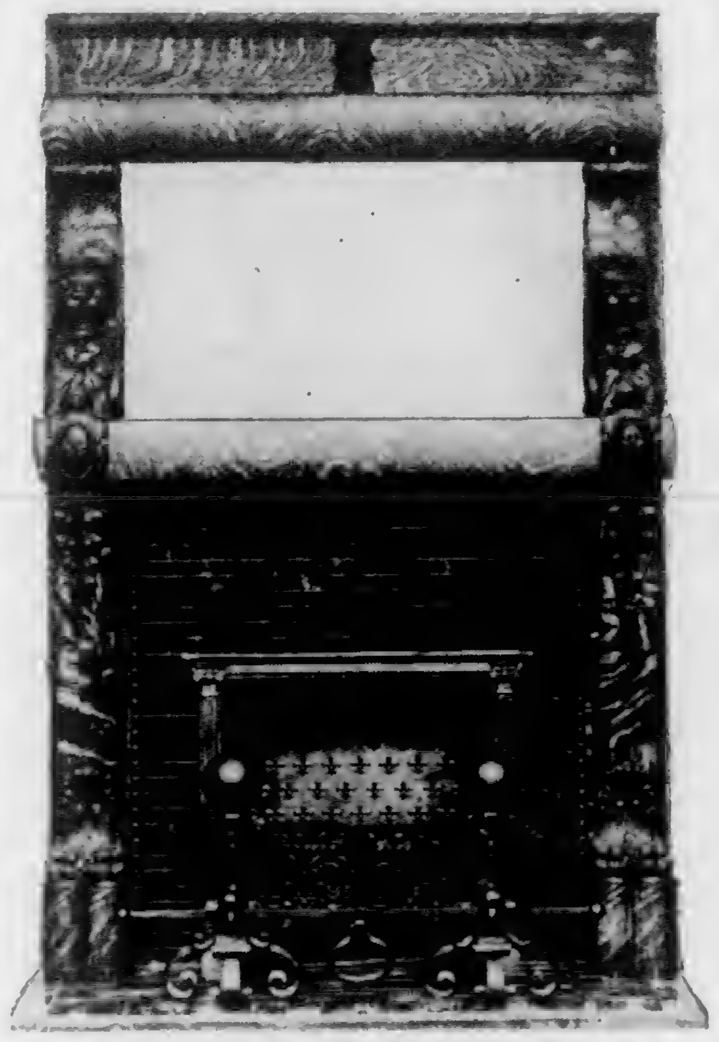

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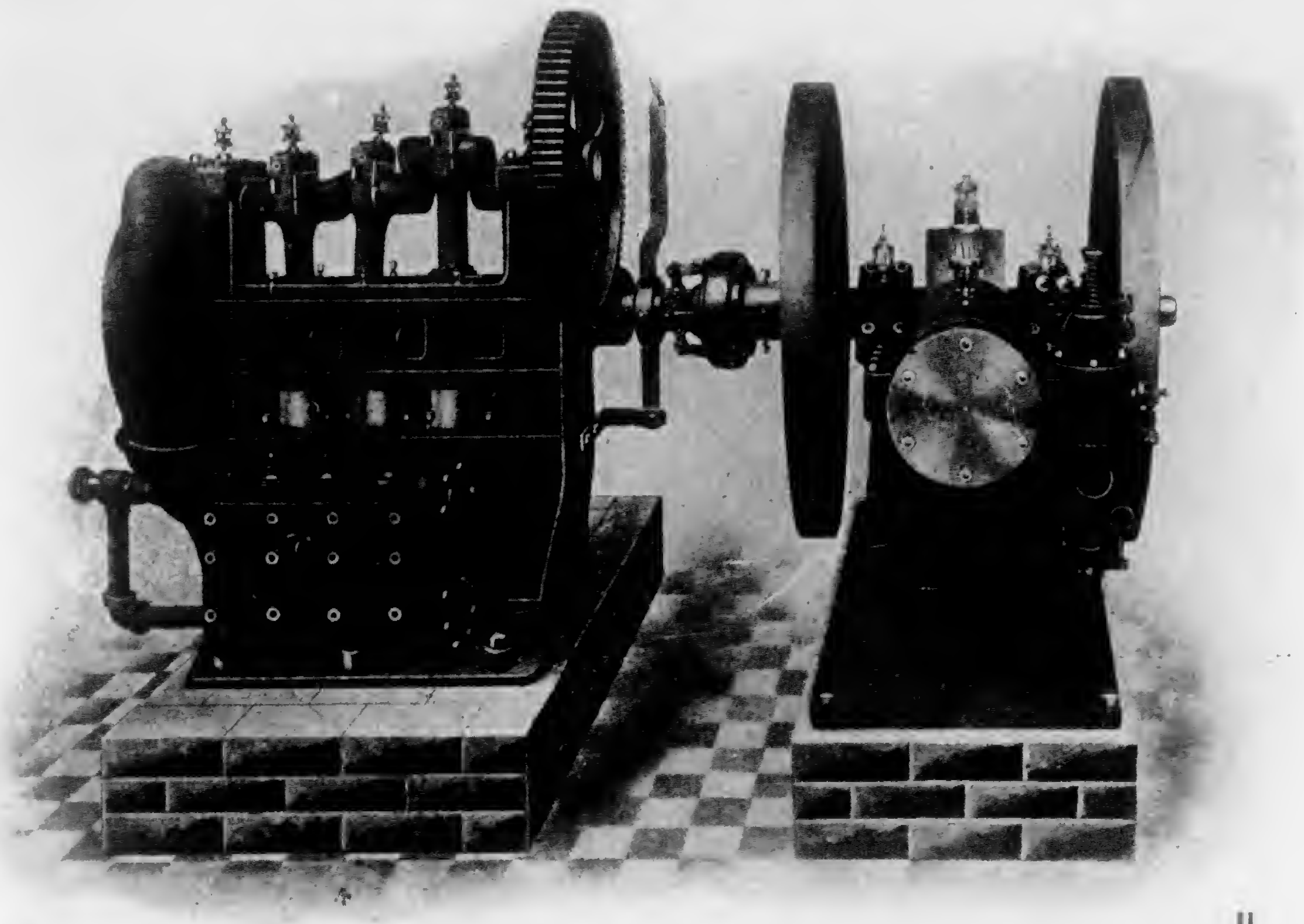

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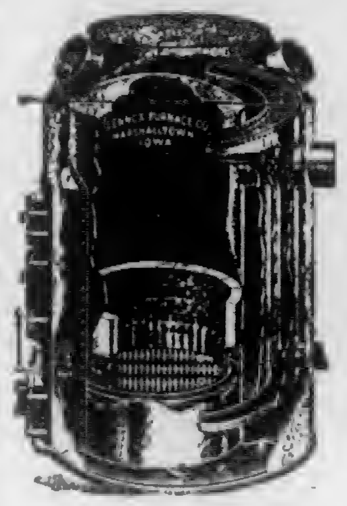

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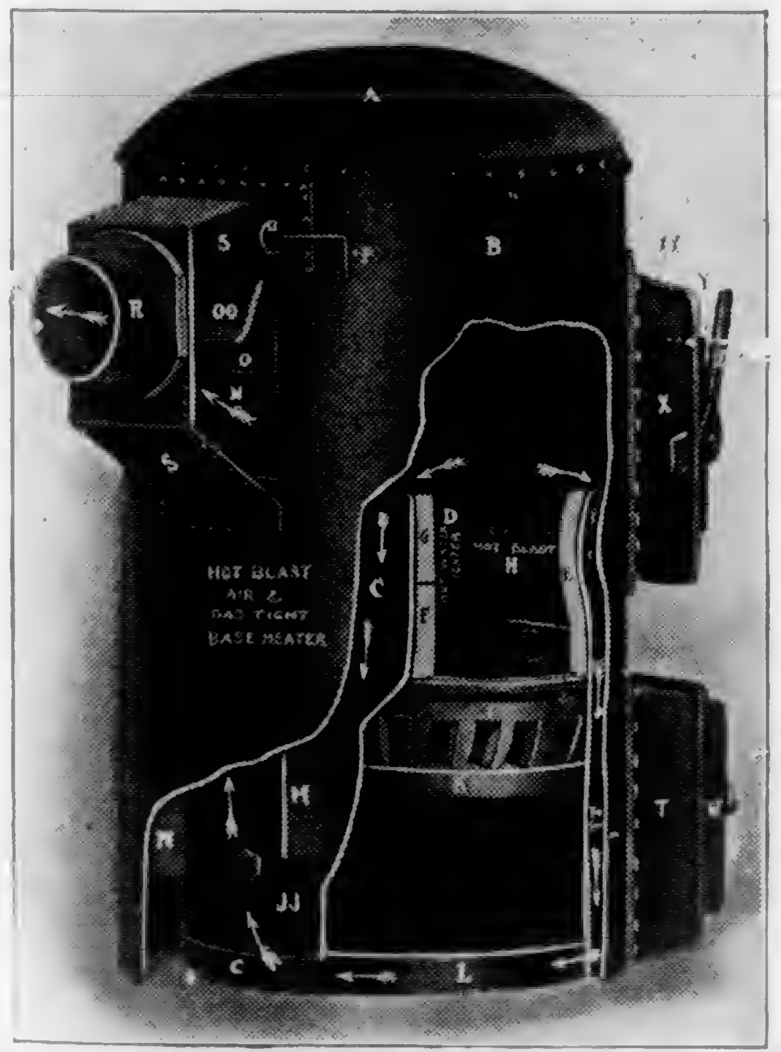

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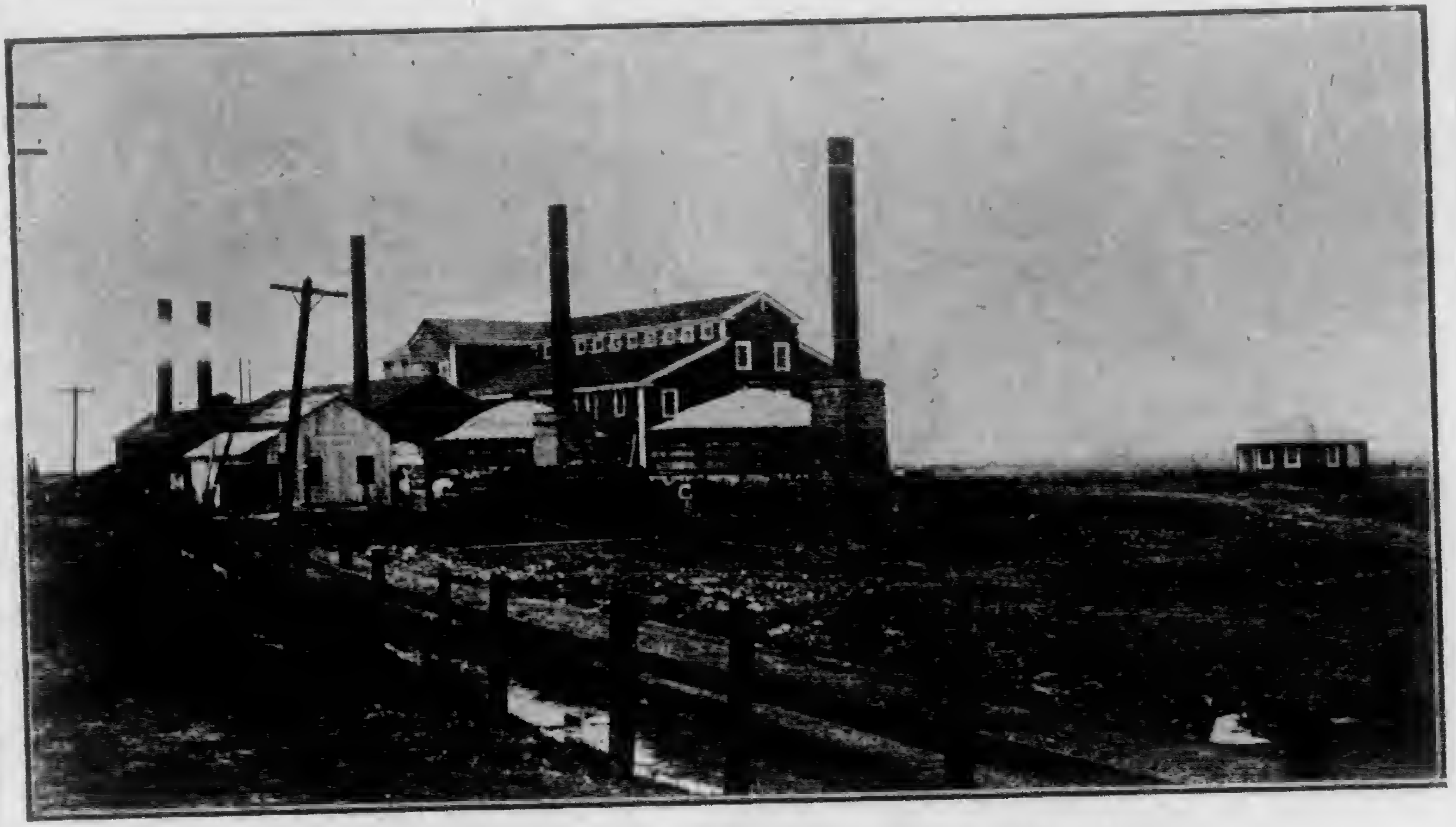

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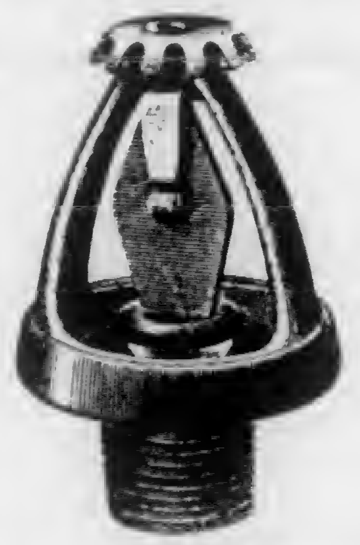

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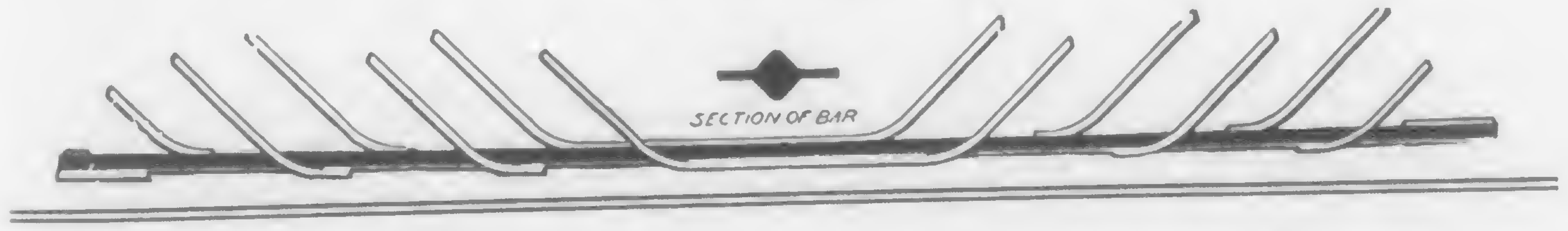

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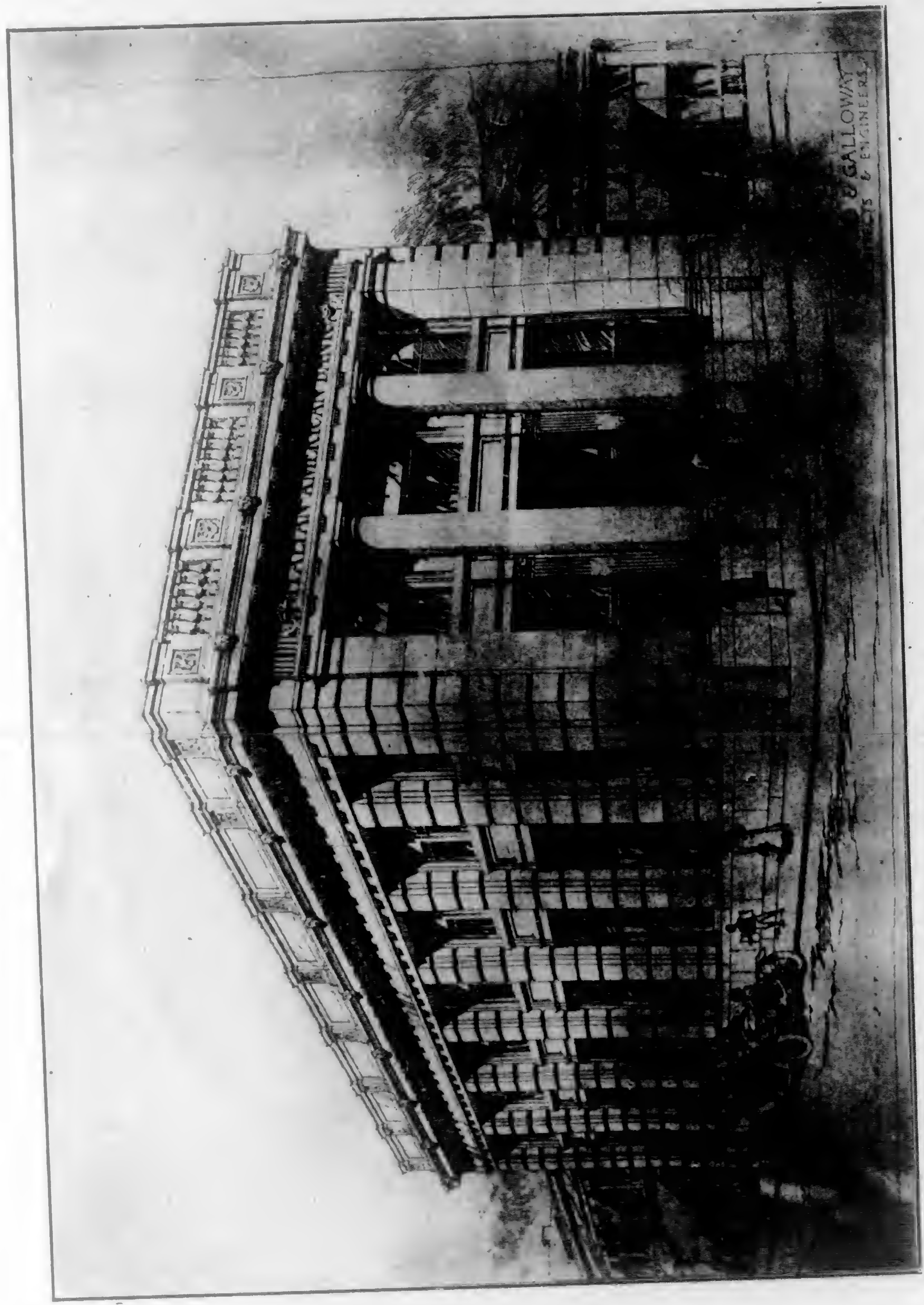

Italian-American Bank Building, San Francisco
John Galen Howard, Architect   John D. Galloway, Engineer

1-35

THE
Architect and Engineer
Of California

Vol. IX.   JUNE, 1907.   No. 2.

The Italian-American Bank Building

Of San Francisco

JOHN GALEN HOWARD, Architect   JOHN D. GALLOWAY, Engineer

PRACTICALLY every bank in San Francisco has begun or will soon commence the erection of a building of its own. Before the fire only a few of the big financial institutions occupied their own property. As a result the banking quarters were not particularly imposing. Every bank in the city suffered by the fire, some more than others. Those obliged to rebuild have spared no expense in planning something substantial as well as ornate for the New San Francisco.

From plans by Howard & Galloway, architects and engineers, the Italian-American bank is erecting on the southeast corner of Montgomery and Sacramento streets, a substantial home of steel, reinforced concrete, brick and granite. The old building was a seven-story brick structure with banking quarters on the ground floor and offices above. There will be but two office floors in the new building.

The steel frame and most of the concrete work is finished. The front walls are to be faced with California granite and backed with brick. The building will have a frontage of 42½ feet on Montgomery and 103 feet on Sacramento street, with an ell extending back from Sacramento street, 137 feet. The main portion of the building will have a height of 41 feet (2 stories) and the rear ell will have a height of 50½ feet (3 stories). The rear walls of the building which are of reinforced concrete contain more material than the front.

A basement extends under the entire building. The bank will occupy all of the first floor and basement of the main building, except that part facing Sacramento street, and directly in front of the rear ell. A store facing on Sacramento street will occupy the remainder of the ground floor. The second and third floors will be used for business offices. The floor of the banking rooms is of white Italian and Verde Antique marble. The counter partitions, screen work and wainscoting are of white Italian and Verde Antique marble and bronze.

A new vault having three floors will be built. The walls, doors and ceilings of the vault will be 12 inches thick. The vertical walls of the vault are to be reinforced with half-inch square corrugated steel bars placed nine inches apart in double rows. The vault floors are reinforced by light railroad rails in addition to a double layer of corrugated bars. The offices on the second and third floors will have metal lath and cement plaster partitions. In order to leave the banking space in the first story entirely free from interior columns it was found necessary to suspend the second floor from a series of trusses. There are six trusses each with a total length of forty feet and a depth at the center of eight feet.

The granite walls to the front are massive and will be anchored to the steel frame so as to withstand earthquake shocks if necessary. One of these anchors is an angle iron extending along the entire length of the heavy granite parapet wall near its top. All the rear walls of the building are of reinforced concrete supported, above the second floor, on the steel frame. These walls have both vertical and horizontal reinforcement. The steel framework will be encased in concrete to a depth of two inches. The protection of the columns, however, will be 4 inches thick. The sloping roof of the building will be formed of a concrete slab over which asbestos shingles will be laid. The greater portion of the concrete foundation of the old building will be utilized.

* * *

The Question of "Cheap" Paints

ALL things considered, there is nothing to fear from the price cutter, says an exchange, in an article on maintaining the price of paints. He cannot adopt such tactics and hold his trade, because he is in no better position to do business without profit than you are, and if he is supplying inferior paints his customers will very quickly find it out and go elsewhere in the future for paints, and whatever else that dealer sells. The average purchaser of paint wants to get the most value for his money possible. In other words, he wants to get his house painted for as small an expenditure as he can. It is a simple matter to demonstrate to him that a good paint, costing from $1.60 to $1.75 per gallon, will save him at least one-fourth the cost were he to use any of the cheap paints that sell for a few cents less per gallon. Once you have shown him the difference in the cost per year between a good paint and the cheap ones, it is a simple matter to get his business. We all know that a good paint, when applied under anything like favorable conditions, will wear from five to eight years, while the cheap paints are doing excellent service if they stand the weather for three years at the most before it becomes absolutely necessary to repaint the house.

* * *

Not for Him

An Irishman one time thought he would spare enough money for a chicken dinner. So he hied himself to the nearest restaurant and proceeded to order his dinner.

"Oi'll have chicken," said Pat to the waiter.

"Would you like it smothered in onions, sir?" asked the waiter.

At this, Pat, with a crash of his fist on the table, exclaimed, "No, be jabers! Give the poor devil a chanst. Wring his neck."

Labor Unions--Their Rights and Duties

By H. W. POSTLETHWAITE

THE fundamental principle and indeed the "ratio vivendi" of labor unionism may be summed up in the phrase—"The injury of the one is the concern of all." The true functions of labor unions are:

First. To protect and safeguard the interests of the union as a whole and of the members individually by every fair and legal method in their power.

Second. To increase the efficiency of labor and thereby render the members entitled to a higher rate of wage proportionate to the increase in output.

Third. To encourage the young men and boys of the country to learn and master a trade and thus fit themselves to ultimately become skilled artisans and useful members not only of their union but of the community in general.

Fourth. To insist upon efficiency in the members and to so regulate the training of the neophyte that every trade may be well furnished with skilled artisans who will on account of their efficiency be preferred by employers to any artisan not a member of a labor organization, thus compelling by force or virtue of merit every laborer and artisan to become a member of a union.

The internal and external affairs of the union should be managed by an executive or advisory committee in much the same manner as the affairs of an industrial corporation are managed by a board of directors. This committee should be composed of experienced, cool headed, conservative men capable of forming a clear and comprehensive judgment of the conditions they have to contend with; more particularly is this necessary as the chief and most important duty of the committee consists in conferring and negotiating with the employer in regard to wages and terms of employment. If in the course of such negotiations the committee is unable by a fair and legitimate presentation of the case to convince the employer that the demands are reasonable it has the privilege of advising a strike; but in the event of a walkout resulting, the union has no inherent, legal or moral right to attempt to prevent by illegal coercion or by threat of physical harm the employer from engaging the services of others who may be willing to accept the terms and wages offered.

The efficiency of labor could be enhanced by the inauguration of technical and practical schools under the auspices of the labor unions themselves or as a private venture for the education and training of young men and boys desirous of learning a trade, also by encouraging emulation and basing the rate of wage upon the result produced. Men should be paid not for the time they spend, but for the work they accomplish. The piece-work system is based on this plan but has many drawbacks. A plan whereby in estimating work upon a contract and labor cost is kept distinct from every other item of cost has proven satisfactory in several instances where tried and certainly has the merit of equality, a merit not possessed by any other proposed solution of the labor problem.

Under this plan the workmen of every class engaged sign an agreement through their representatives to perform the work at a certain estimated figure mutually agreed upon. The workmen are then paid the regular rate of wages and the difference between the amount paid in wages and the estimated wage cost is either debited or credited as the case may be to the "Surplus Labor Fund." A semi-annual dividend is declared on this fund amounting in some cases to 50% of the regular pay. This result is not obtained through unreasonable exertion on the part of the workmen, but is due to the fact that they concentrate their mind on their work and pull together. No man can shirk under these conditions with impunity as he will be speedily edged out of the works by his fellow workmen who are interested in his efficiency. This plan would not meet with the approval of the labor union leaders of the present day, as it comes in direct conflict with the union theory that it is the duty of a man to do as little as possible to hold his place in order that there may be more jobs available for other men. An alert and vigorous workman has no legitimate place in an up-to-date union.

The industrial conditions existing in San Francisco today are deplorable and unless some immediate and radical measures are taken to break or at least abate the present anarchial labor rule will inevitably result in the permanent crippling of the city as a central distributing point for the Pacific Coast.

The labor leaders of this city have subverted and prostituted to their own selfish ends the true and fundamental principles of unionism as above stated. They have not the welfare of the workingman at heart, but are continually stirring up strife in order that they individually may contine to draw down their princely salaries. In their ghoulish fashion they thrive and fatten on the troubles and losses of their fellow workmen, who, like unthinking sheep, blindly follow their lead, or if they show any desire to revolt are coerced into submission by threat of bodily injury. These leaders have arrogated to themselves the power of life and death over the members of the union and threaten to wield a like power over those without the pale of the union should they refuse to bow to their will.

The unions of today instead of raising the efficiency of labor have curtailed it in every way possible and in order to insure the employment of the inefficient union men have caused an artificial scarcity of labor and have now practically by illegal and criminal methods obtained a corner on the labor market. Since the organization of labor unions in this country our boys and young men have in many trades been entirely barred from learning the business and in others they have been so restricted that they might as well have been entirely barred out. By union rules even the father has been forbidden to teach his son the trade which his father had taught him. The old time apprenticeships under which the master and the apprentice worked on the same scaffold have passed away through the arbitrary and tyrannical methods of organized labor. All is now changed and most of those engaged in skilled labor are men of foreign birth; and why, because the native-born American boy is not permitted to learn the trade of his father, uncle or elder brothers.

The right of every young man to learn a trade should be free and unchecked (and so it was until the constitution of the labor unions was allowed to take precedence and ride rough-shod over the Constitution of the United States), the disposition to learn should be encouraged, as education is an incentive to good citizenship. It is a reproach upon the fair name of our free country to stand idly by and allow any labor union to dictate what our boys shall do or shall not do. Such rules and restrictions as are laid down by the unions tend to force boys into idleness and to become hoodlums and tramps and finally criminals and outlaws. The policy of the unions is to restrict and curtail the output of the skilled and competent workman so that it will not exceed the output of the most incompetent. The wages demanded, however, are based on the maximum output of the most skilled and competent workman thus smiting the employer fore and aft and rendering it impossible for him to compete successfully with an "open shop" community where the natural law of supply and demand is allowed to govern the rate of wages and where no artificial scarcity of labor is permitted.

To quote William D. Haywood, secretary of the Western Federation of Miners: "Trade unions are nothing more nor less than a labor monopoly. They are trusts just as much as the Standard Oil and Sugar trusts. They attempt to restrict the supply of labor in order, as they think, to hold up wages. Through the apprentice system they are making tramps of hundreds of young men by denying them the right to learn a trade. They attempt to dictate to employers whom they shall hire and how much they shall pay. They do not permit employers to give young men a chance to better their conditions."

Prosperity in San Francisco cannot become permanent so long as labor unions are watching their opportunity to destroy the business of the employer, and it is high time that the laboring men of this city realized the folly of belonging to and upholding organizations whose basic principle is the limitation of apprentices and membership and the restriction of output instead of a recognition of efficiency in the members. The establishment of trade schools under private, or better still, government auspices at which a boy could obtain a practical and technical training in a skilled trade would offset the pernicious influence of the labor unions and would prevent the trades of this country from being monopolized by men of foreign birth. This would insure an equal opportunity to all and a generation of young men would grow up to take the places of and to care for those men now in the prime of life whose usefulness will shortly wane. In conjunction with these trade schools must be an enforcement of the law to insure adequate protection and the full enjoyment of the privileges of individual freedom of action granted and guaranteed by the Constitution of the United States.

The exorbitant cost of building in San Francisco is not due so much to the high rate of wages prevailing nor to the high price of building materials but chiefly to the great decline in the efficiency of labor. Five years ago, for instance, bricklayers were receiving from \$4.50 to \$5.00 per day and were laying from 2000 to 3000 brick per day, according to conditions. These self-same bricklayers are today receiving from \$7.00 to \$8.00 per day, and are only laying from 700 to 1500 brick per day which is equivalent to an increase of 200% in wage cost. A similar decline in efficiency is noticed in all the building trades; the theory of the unions presumably being, "The greater the wage the smaller the output should be."

Last year in the eleven leading cities of the Union 800,000 men were employed in the erection of buildings amounting in value to \$380,000,000. In order to merely restore old San Francisco \$400,000,000 worth of building (this cost is based on the higher efficiency of labor not the present low efficiency) will have to be done. To accomplish this enormous task the unions at this time can only furnish 35,000 men. On this showing it will take twenty-five years to bring San Francisco to her old state. It is generally conceded that this city must be rebuilt in ten years at most, and to accomplish this, 90,000 men will be required—where are they to be obtained—unless all those skilled in building craft whether union or non-union are allowed to assist. If the unions will not permit non-union men to work peaceably and without threat or interference in the reconstruction of our city when they admittedly are unable to furnish the necessary labor required "open shop" must of necessity be declared and enforced and the unreasonable anarchial and criminal rule of unionism must be broken.

* * *

We all know what Harriman would do to the Panama canal to make it practical, if he was in charge. He would stop throwing away money on construction work and just issue watered stock enough to float full sized war ships right over the isthmus.

William H. Weeks, Architect

Suburban
Architecture
In California

The Work of
William H. Weeks, Architect

Building the Home

*With Illustrations of
Houses Built by
the Author*

WILLIAM H. WEEKS
Architect

William H. Weeks, Architect

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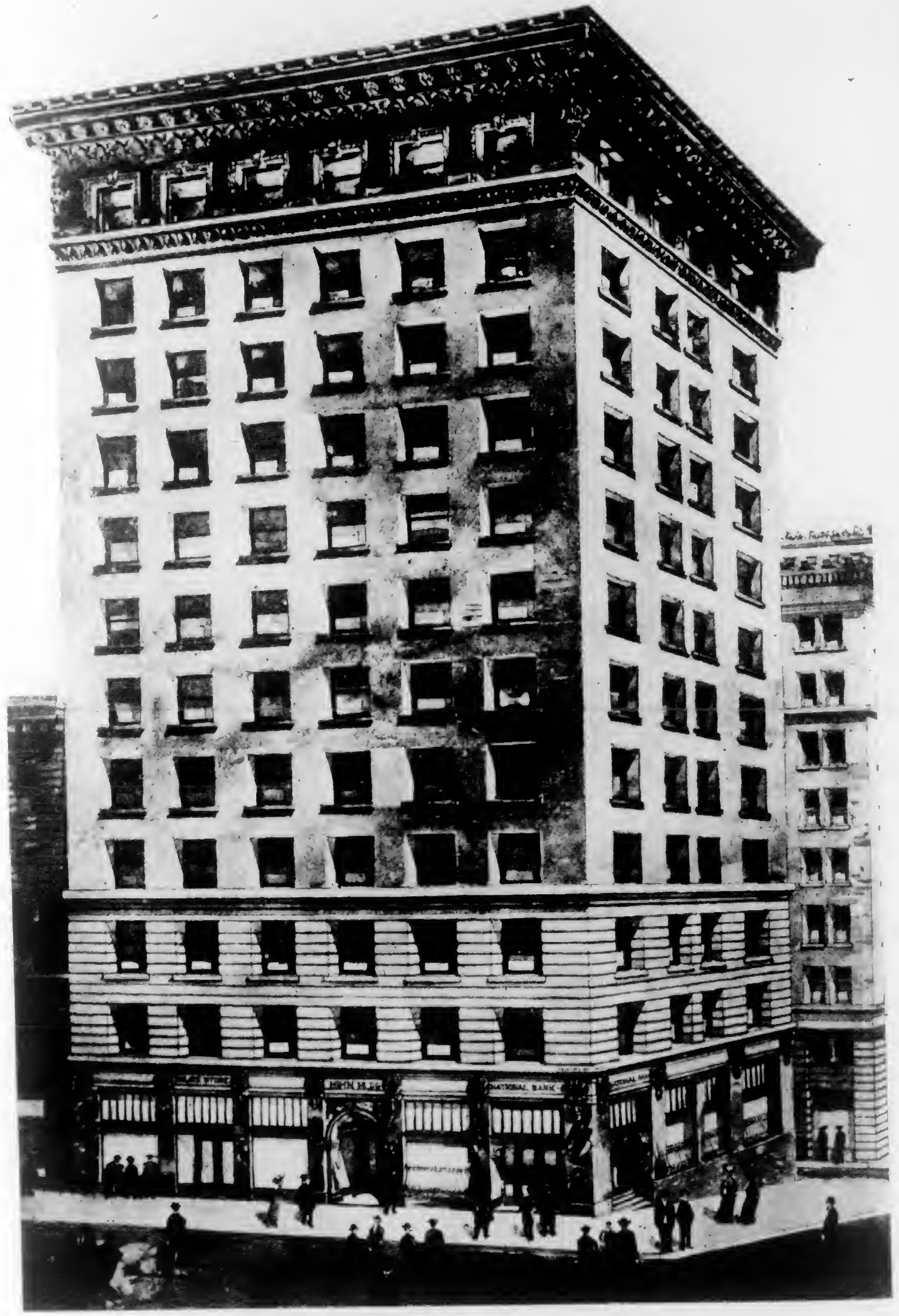
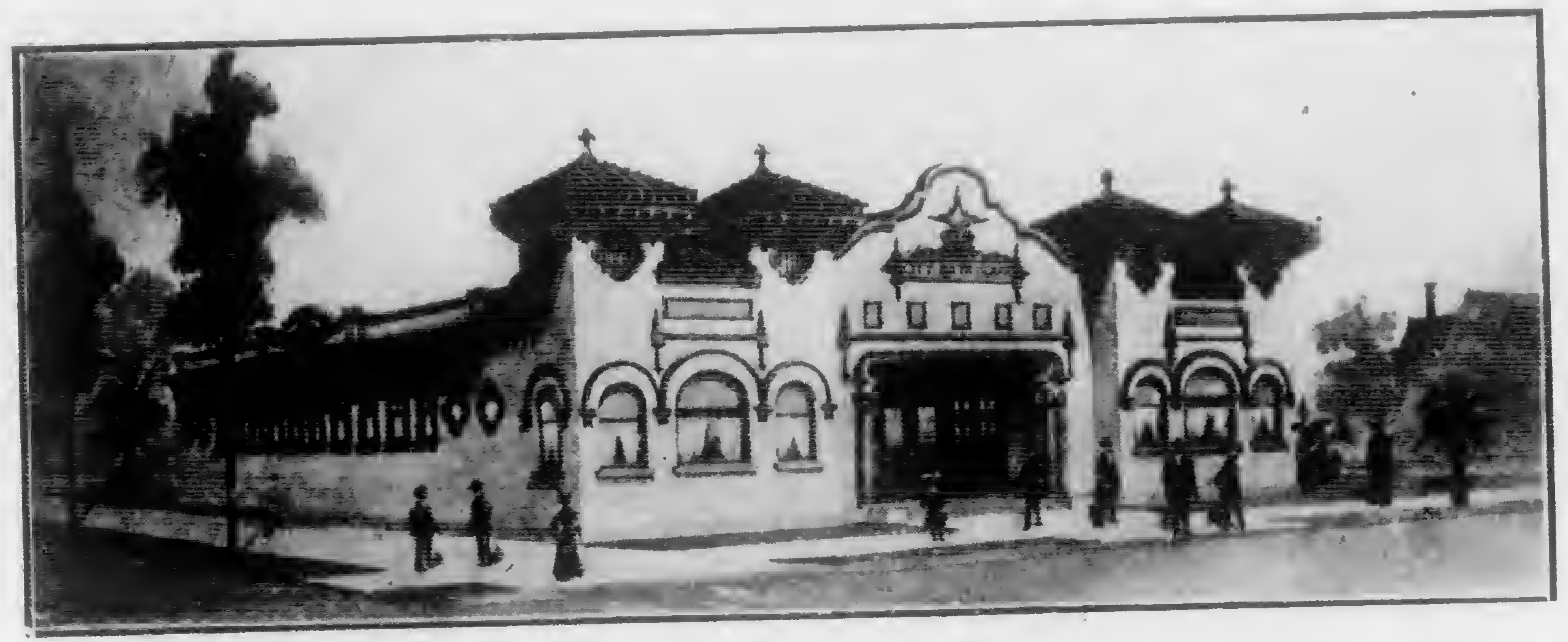


Building for F. A. Hihn, Kearny and Bush Streets, San Francisco.
W. H. Weeks, Architect



City Bath House, Paso Robles, Cal.
W. H. Weeks, Architect

Suburban Architecture in California

The Work of WILLIAM H. WEEKS, Architect

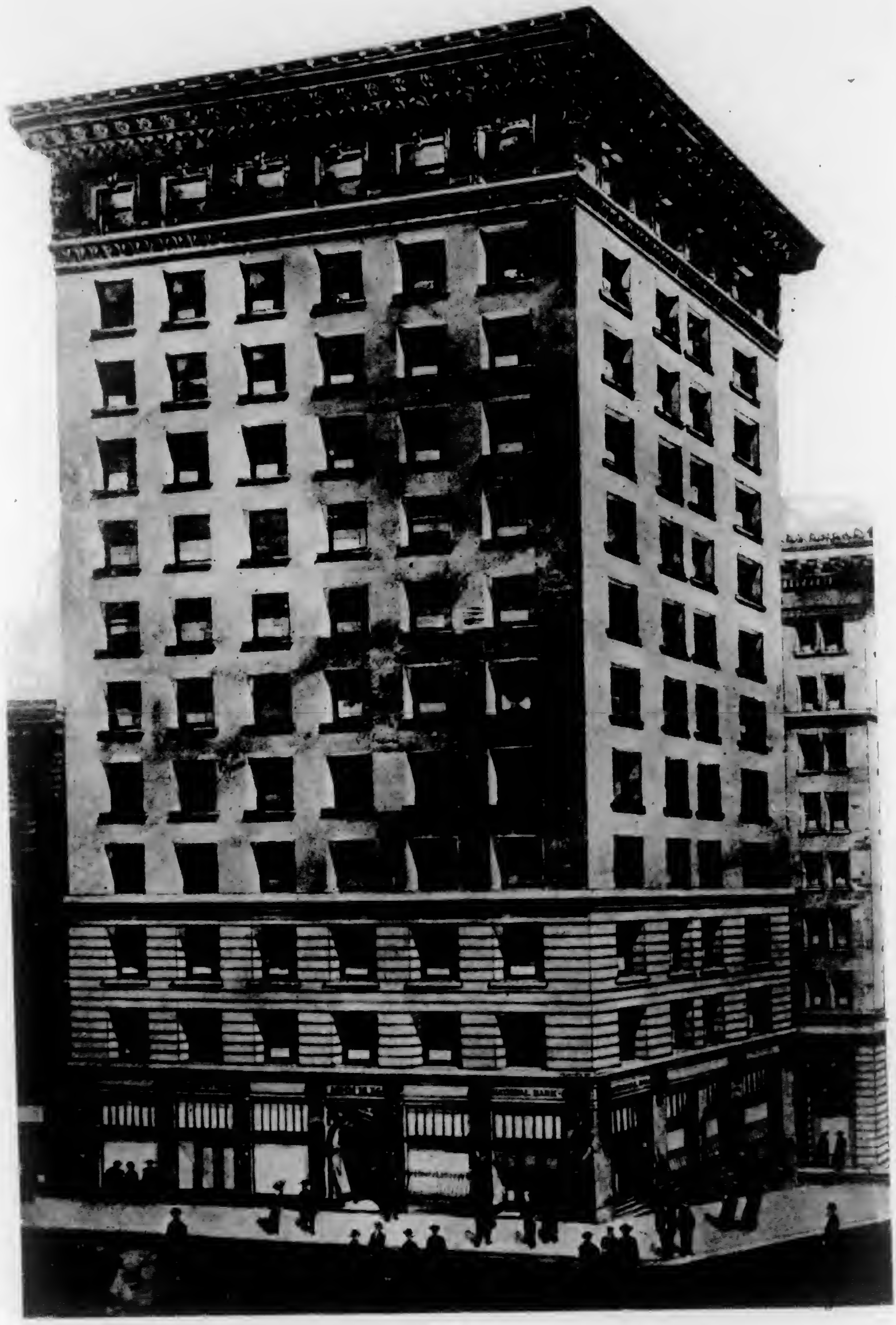
WITH the steady growth in population of the central coast cities in California has come a demand for more pretentious and costly buildings. For the last half dozen years there has been a tendency on the part of each town to outdo its neighbor in construction of handsome buildings. It has not been a race for numbers so much as a contest for class. Good buildings has been the key note. By good is meant substantial, well built structures as well as ornate. The municipalities and townships have happily manifested quite as much enthusiasm for fine buildings as the private citizen and merchant. The result is that we find not a few very handsome public buildings, such as city halls, libraries, courthouses and churches, which the big city may have good cause to envy.

Probably no one architect has been more prominently identified with the development and upbuilding of the cities of the central coast counties than William H. Weeks of Watsonville. His work may be found in practically every city and town as far north as San Francisco and as far south as Santa Barbara. Mr. Weeks has been planning buildings in California for nearly ten years and his work has embraced nearly every class of building from the substantial, up-to-date office building to the one story, suburban store; and from the historic mission-style church to the classic Gothic cathedral; and from the modest town hall to the imposing county courthouse.

Schooled to be painstaking and thorough in every detail and with an honesty of purpose to give his clients the best service possible, looking closely after their interests, Mr. Weeks has made for himself a reputation of which he may well feel proud.

Mr. Weeks was born in Prince Edward Island, Canada, in 1866. He received his early education in the Prince of Wales College of Charlottetown. His ability as an architect comes natural, as his father was a prominent architect and builder who stood high in his profession in Canada, where for many years he held the position of Superintendent of Public Works.

In 1880 Mr. Weeks moved to Colorado where he took the architectural course at the Brinker Institute of Denver. This, in addition to the expe-



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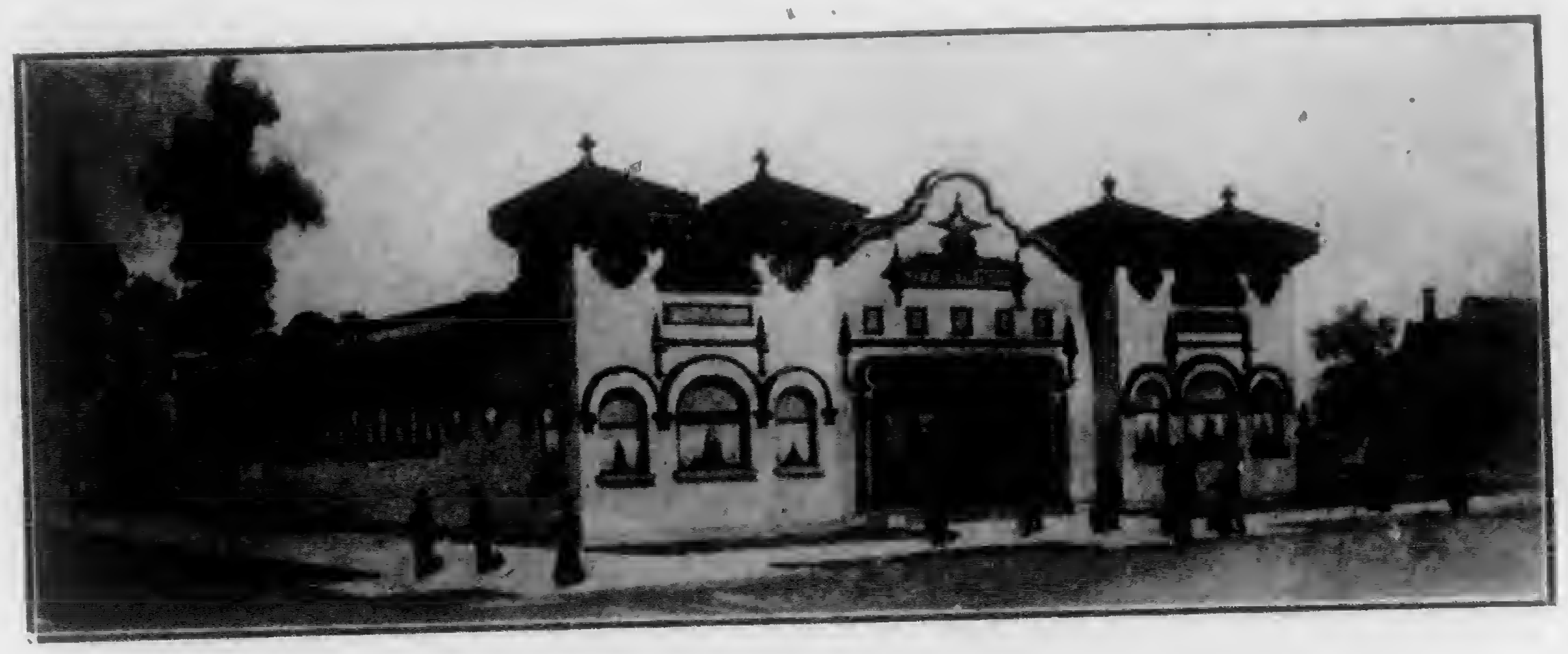

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Suburban Architecture in California

The Work of WILLIAM H. WEEKS, Architect

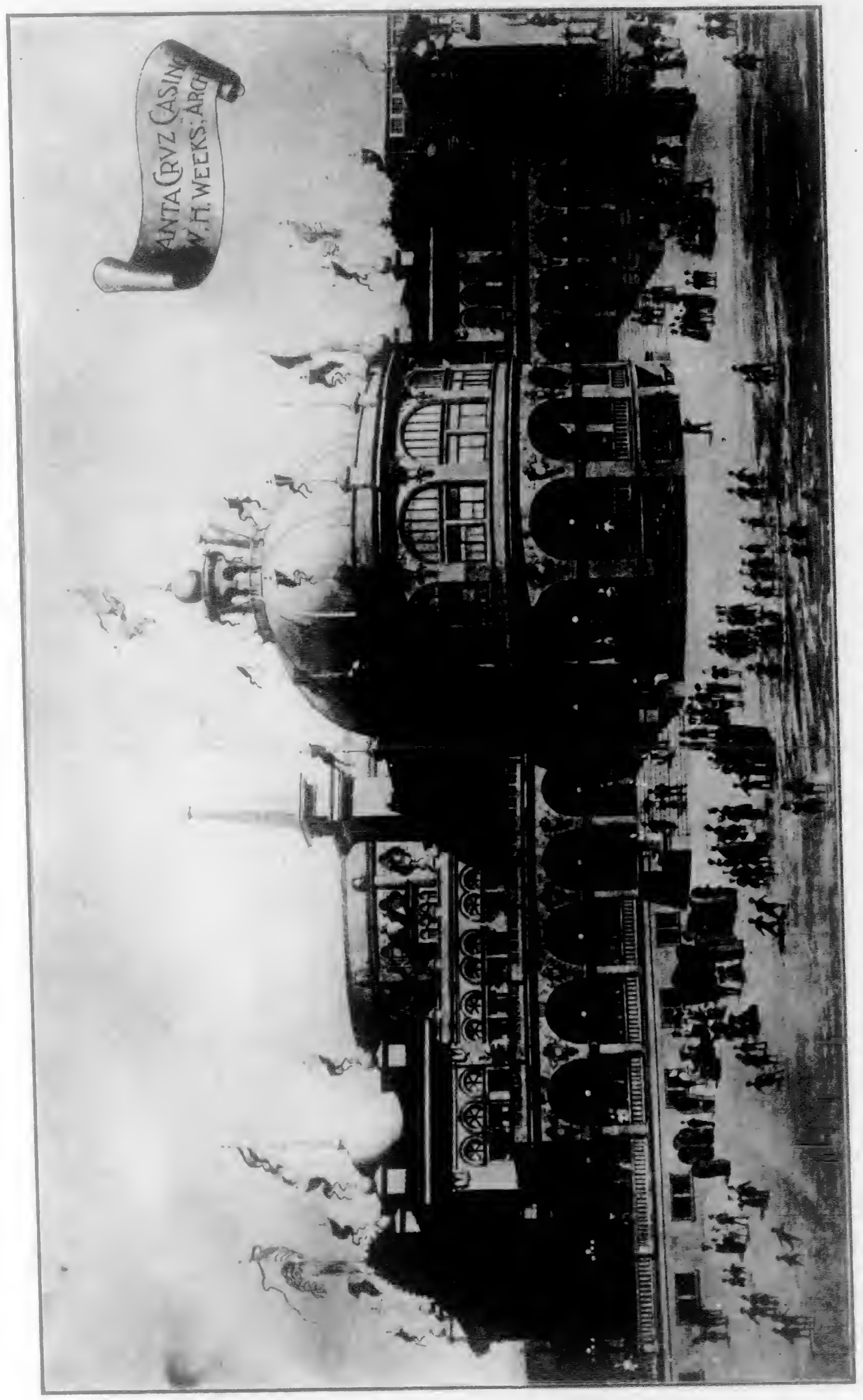
WITH the steady growth in population of the central coast cities in California has come a demand for more pretentious and costly buildings. For the last half dozen years there has been a tendency on the part of each town to outdo its neighbor in construction of handsome buildings. It has not been a race for numbers so much as a contest for class. Good buildings has been the key note. By good is meant substantial, well built structures as well as ornate. The municipalities and townships have happily manifested quite as much enthusiasm for fine buildings as the private citizen and merchant. The result is that we find not a few very handsome public buildings, such as city halls, libraries, courthouses and churches, which the big city may have good cause to envy.

Probably no one architect has been more prominently identified with the development and upbuilding of the cities of the central coast counties than William H. Weeks of Watsonville. His work may be found in practically every city and town as far north as San Francisco and as far south as Santa Barbara. Mr. Weeks has been planning buildings in California for nearly ten years and his work has embraced nearly every class of building from the substantial, up-to-date office building to the one story, suburban store; and from the historic mission-style church to the classic Gothic cathedral; and from the modest town hall to the imposing county courthouse.

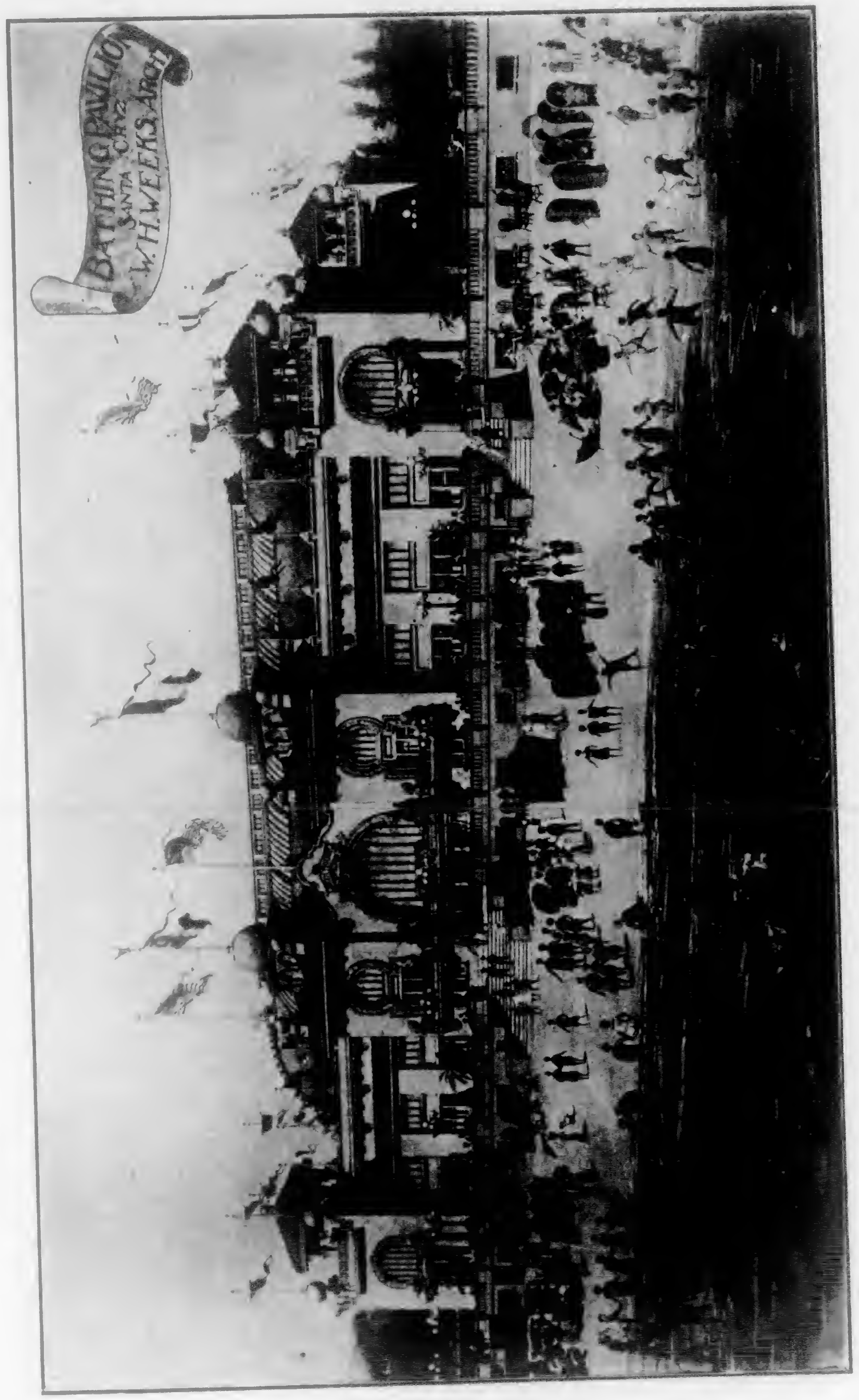
Schooled to be painstaking and thorough in every detail and with an honesty of purpose to give his clients the best service possible, looking closely after their interests, Mr. Weeks has made for himself a reputation of which he may well feel proud.

Mr. Weeks was born in Prince Edward Island, Canada, in 1866. He received his early education in the Prince of Wales College of Charlottetown. His ability as an architect comes natural, as his father was a prominent architect and builder who stood high in his profession in Canada, where for many years he held the position of Superintendent of Public Works.

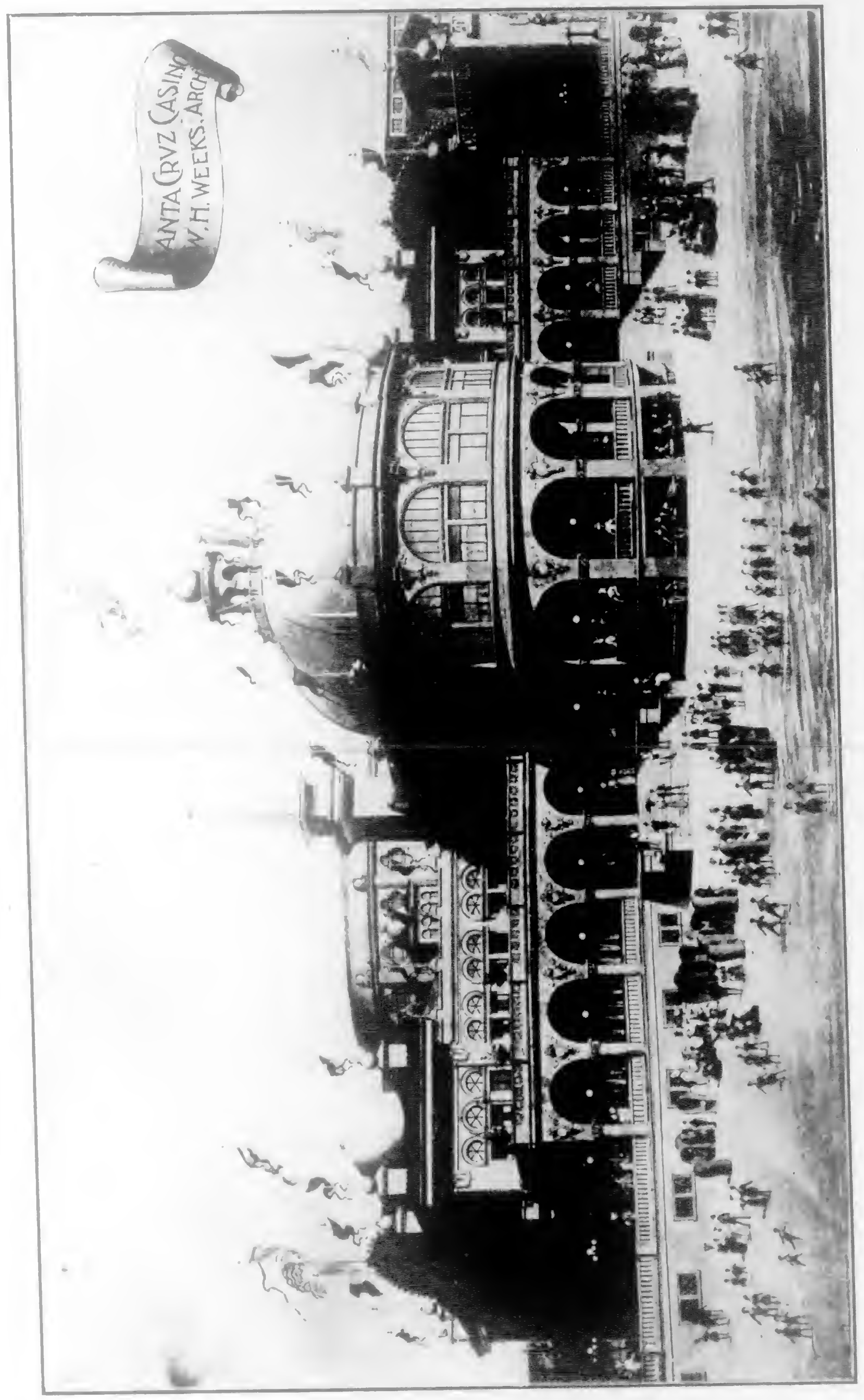
In 1880 Mr. Weeks moved to Colorado where he took the architectural course at the Brinker Institute of Denver. This, in addition to the expe-



The New Casino at Santa Cruz, Cal.
W. H. Weeks, Architect



The Bathing Pavilion, Santa Cruz, Cal.
W. H. Weeks, Architect



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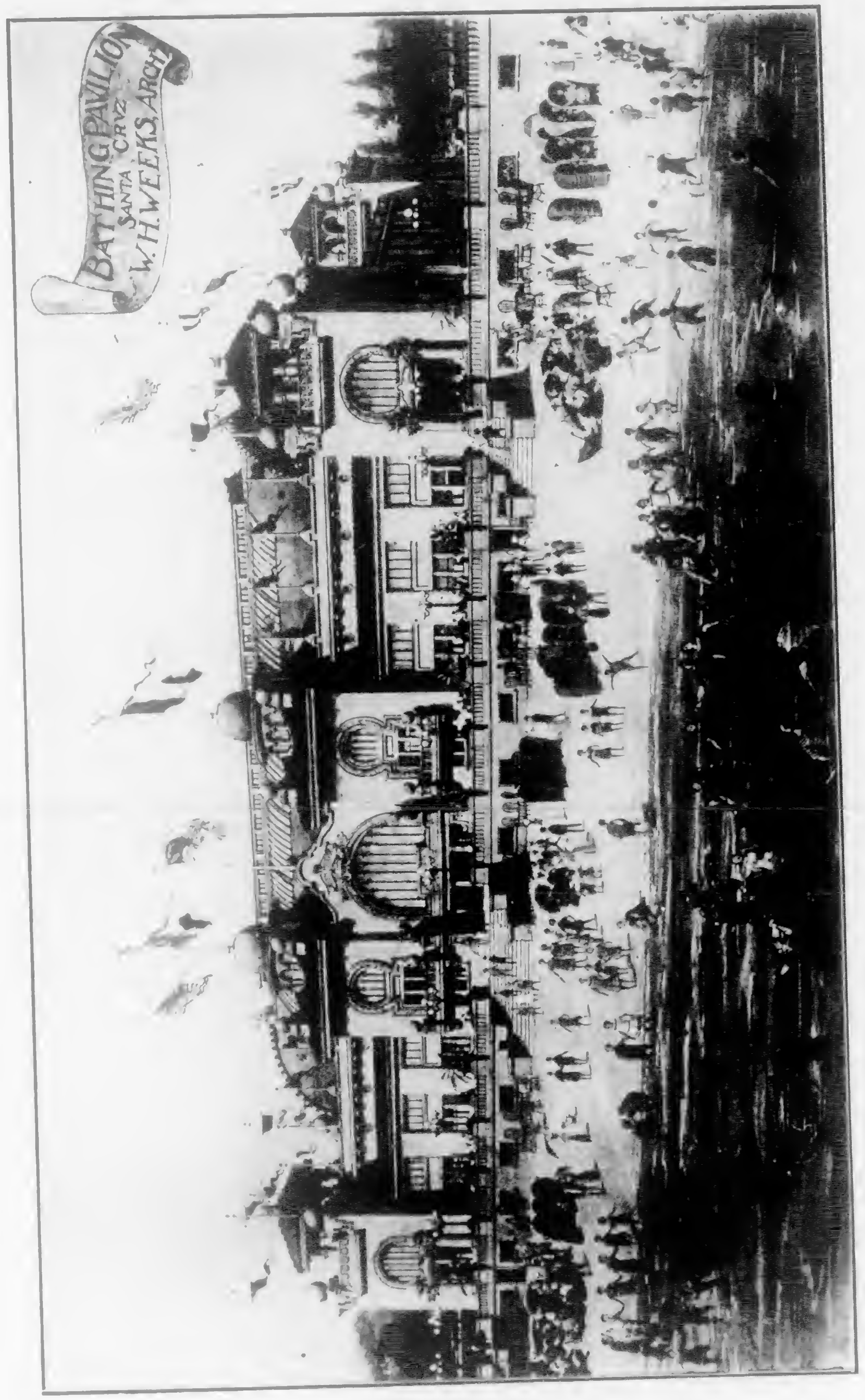

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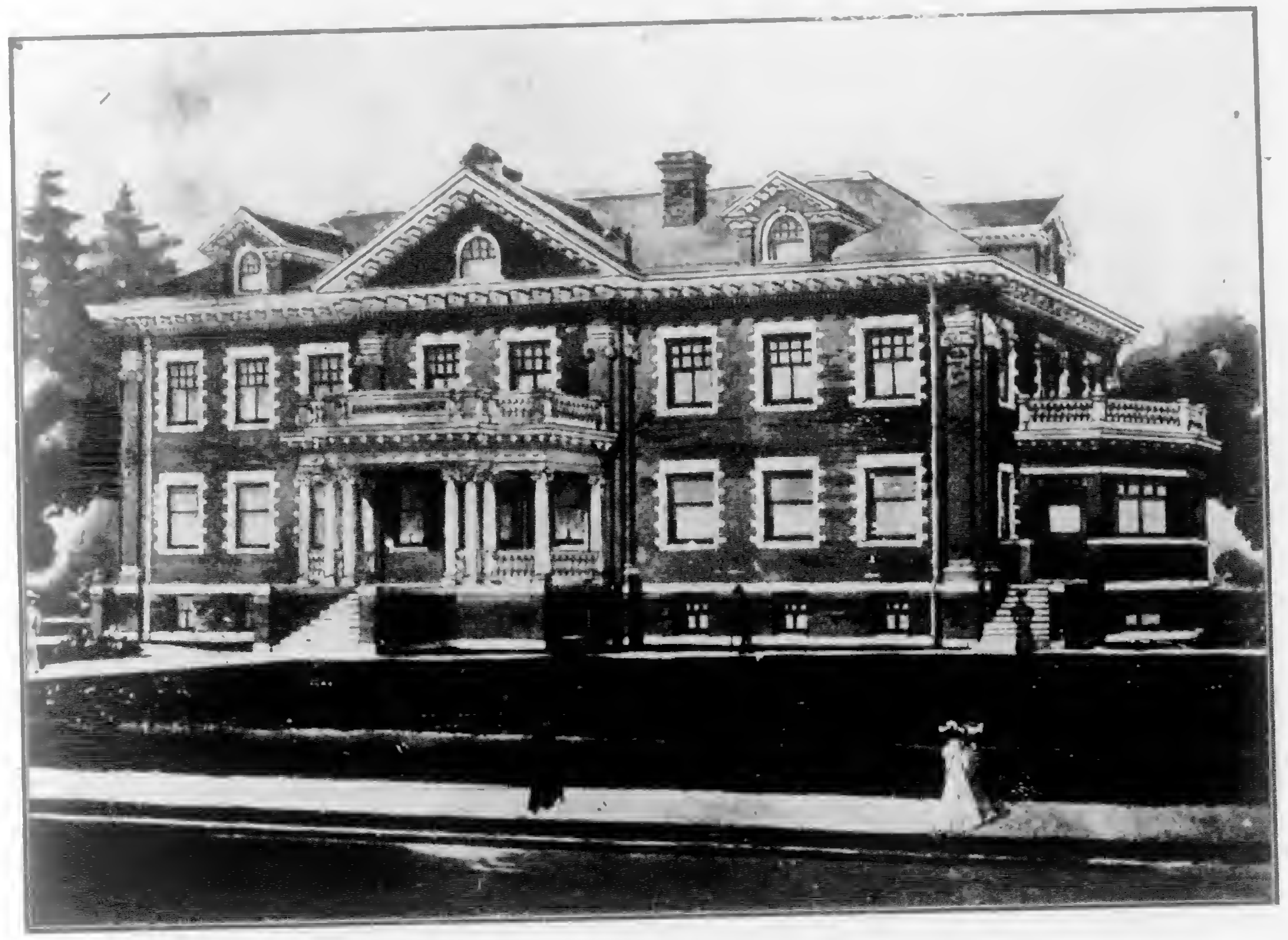
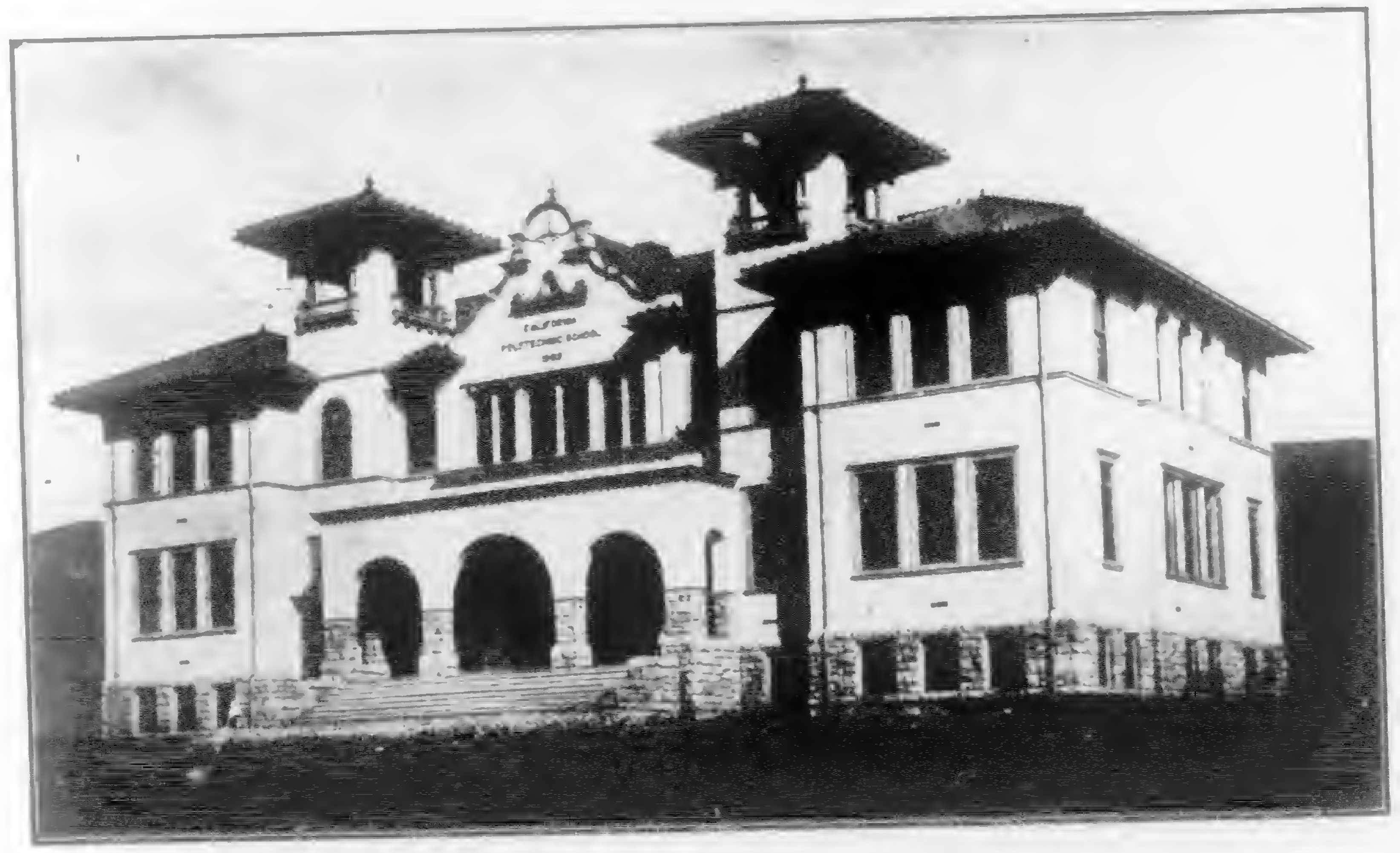
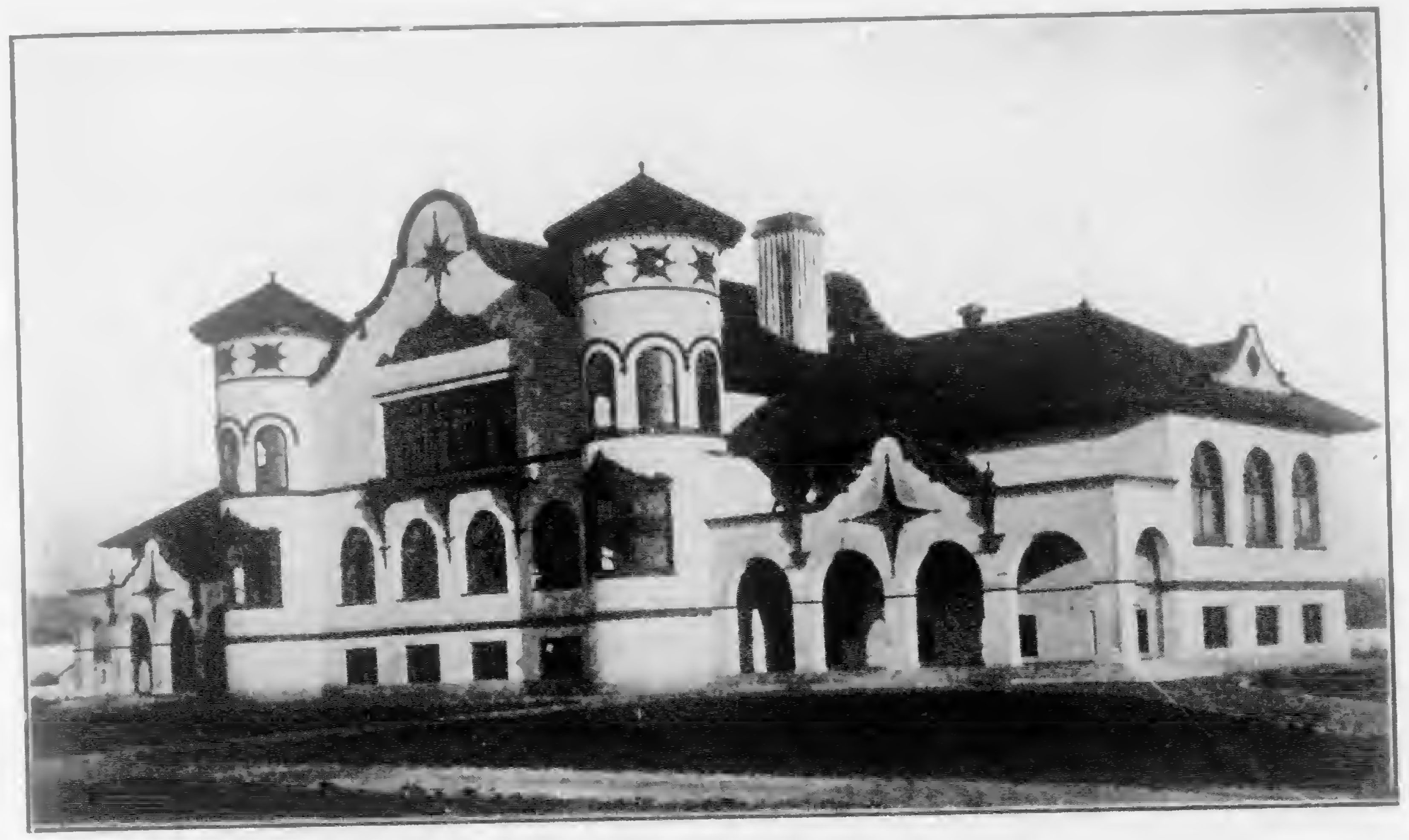


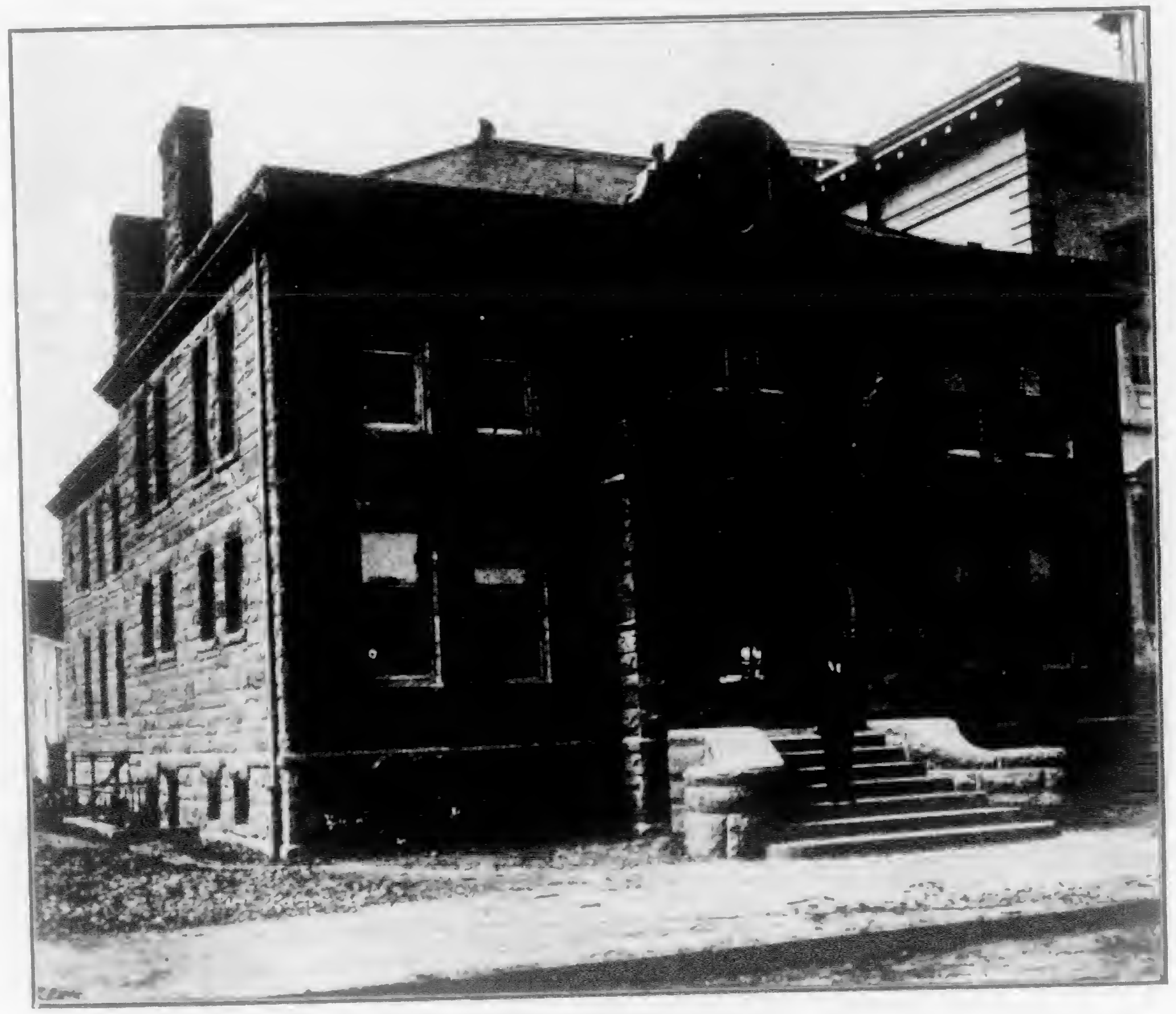
The James Bardin Hospital, Salinas, Cal.
W. H. Weeks, Architect



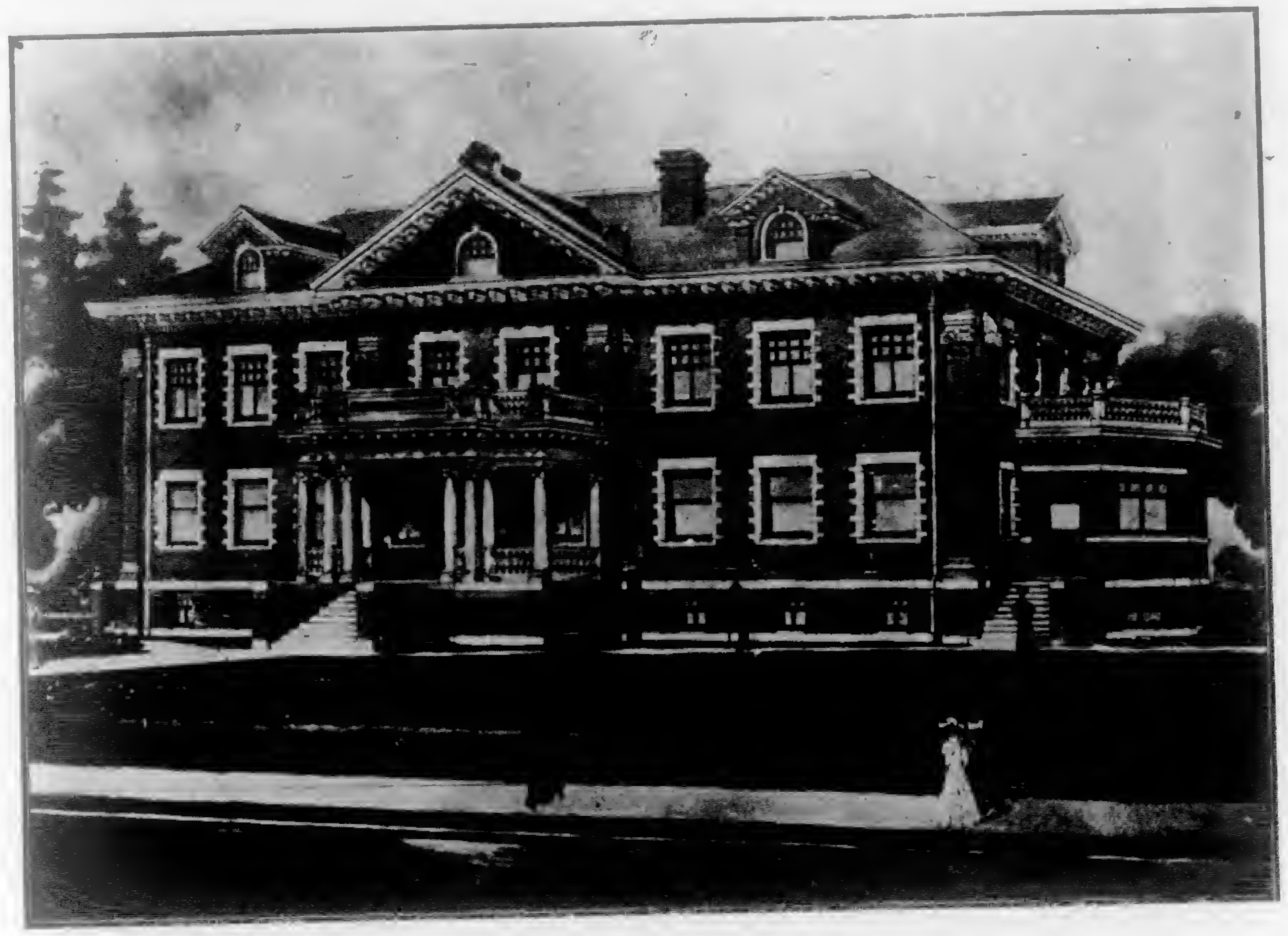
Administration Building State Polytechnic School, San Luis Obispo, Cal.
W. H. Weeks, Architect



High School, Watsonville, Cal.
W. H. Weeks, Architect



County Jail and Sheriff's Residence, Salinas, Cal.
W. H. Weeks, Architect



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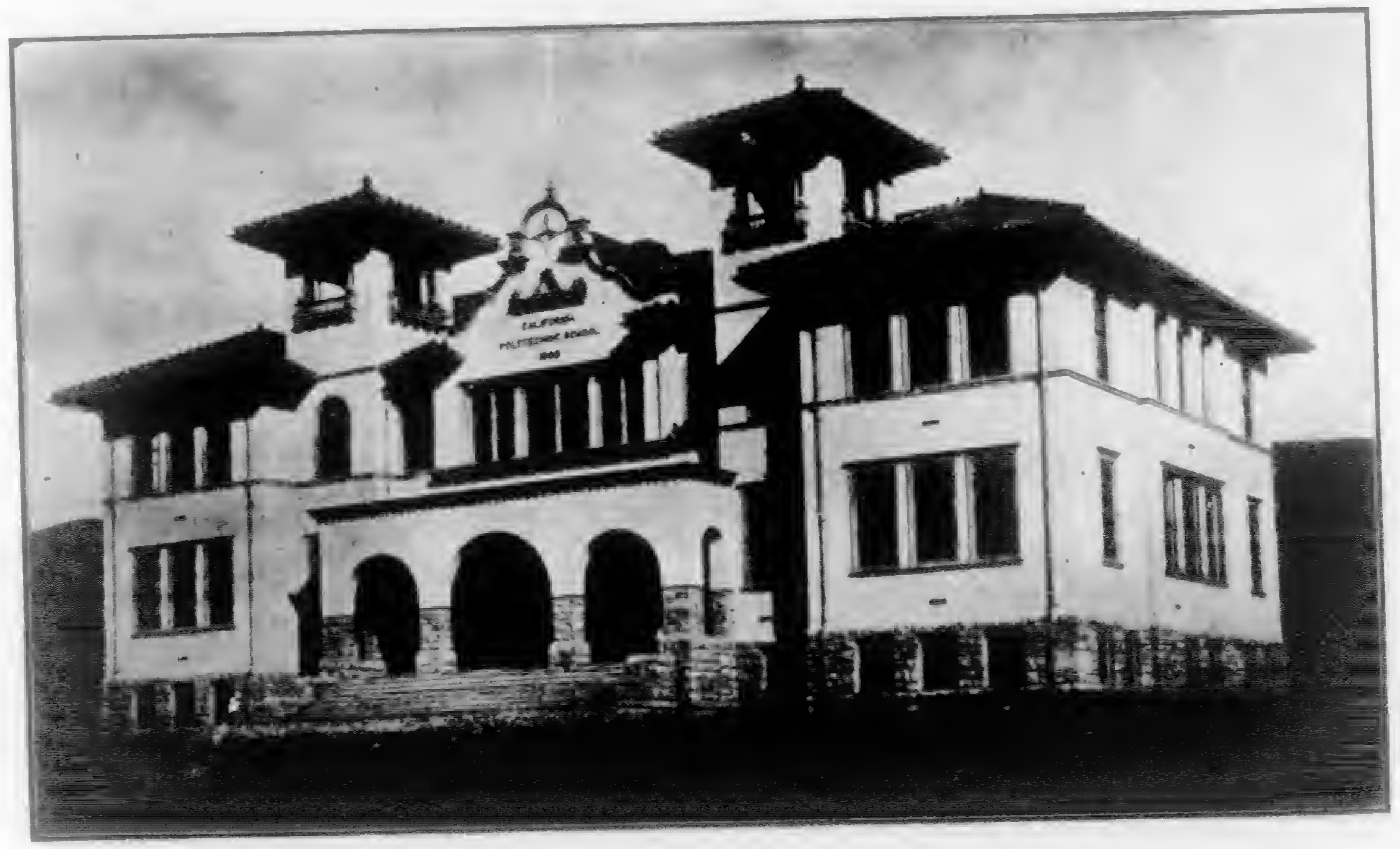

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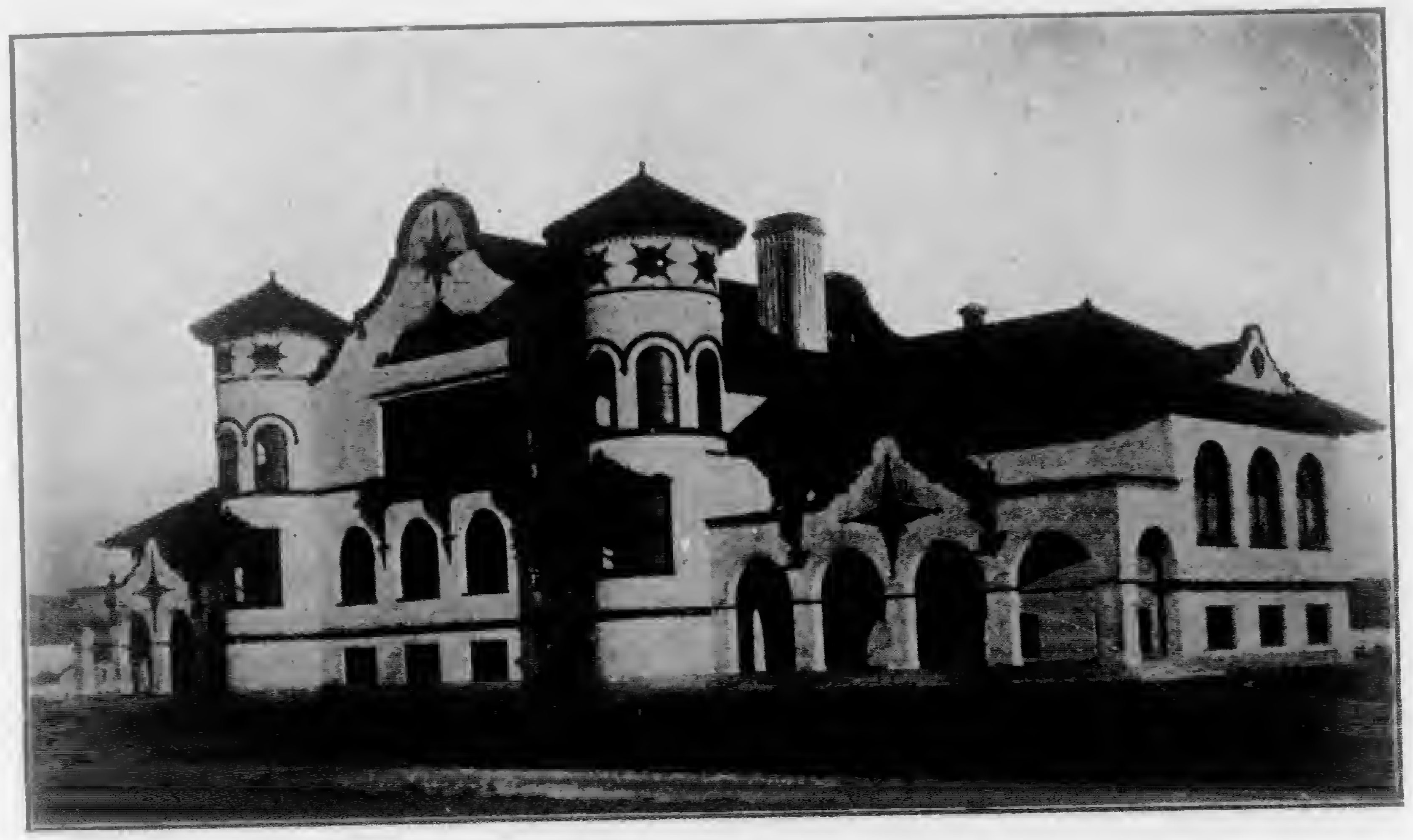

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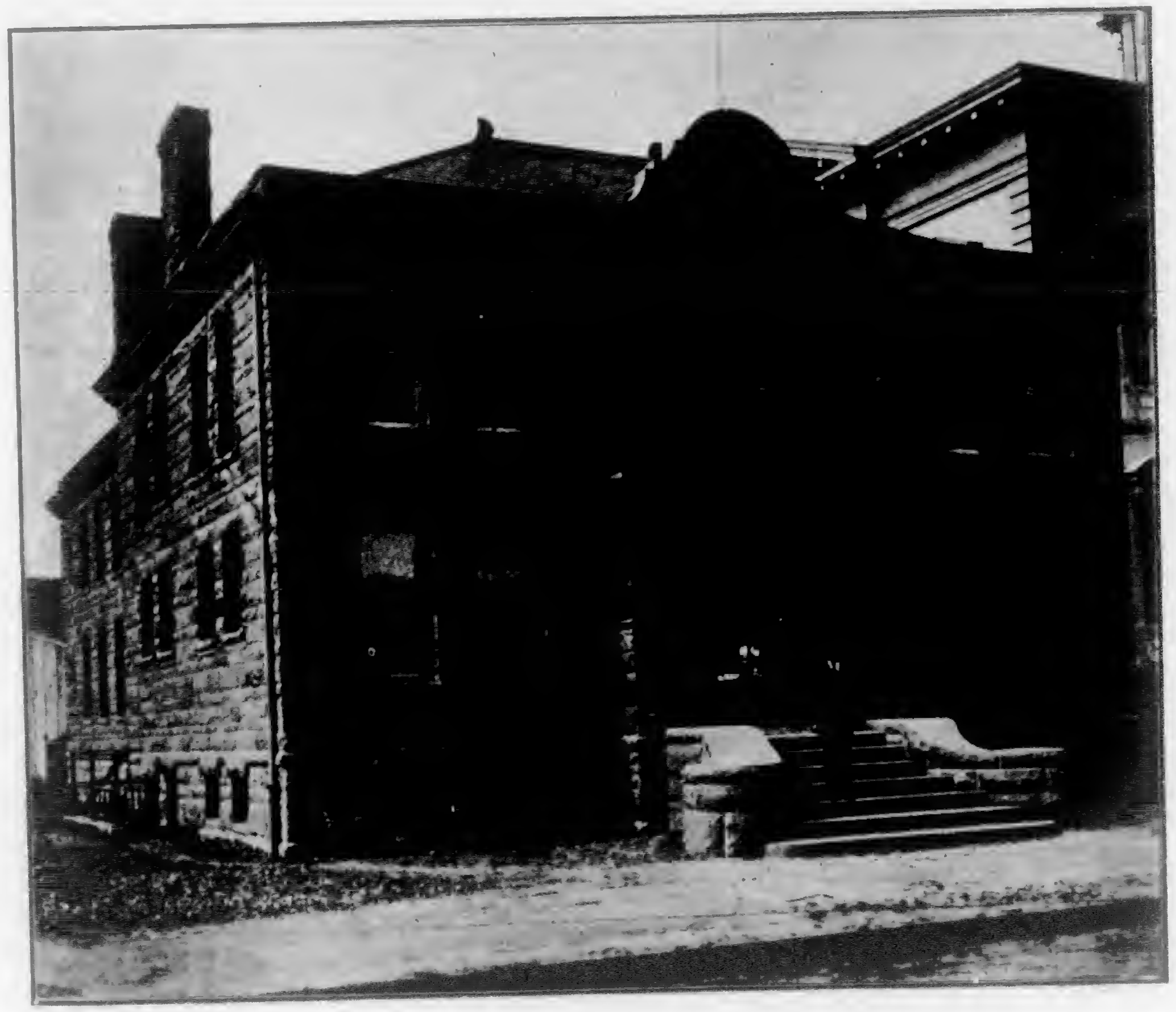

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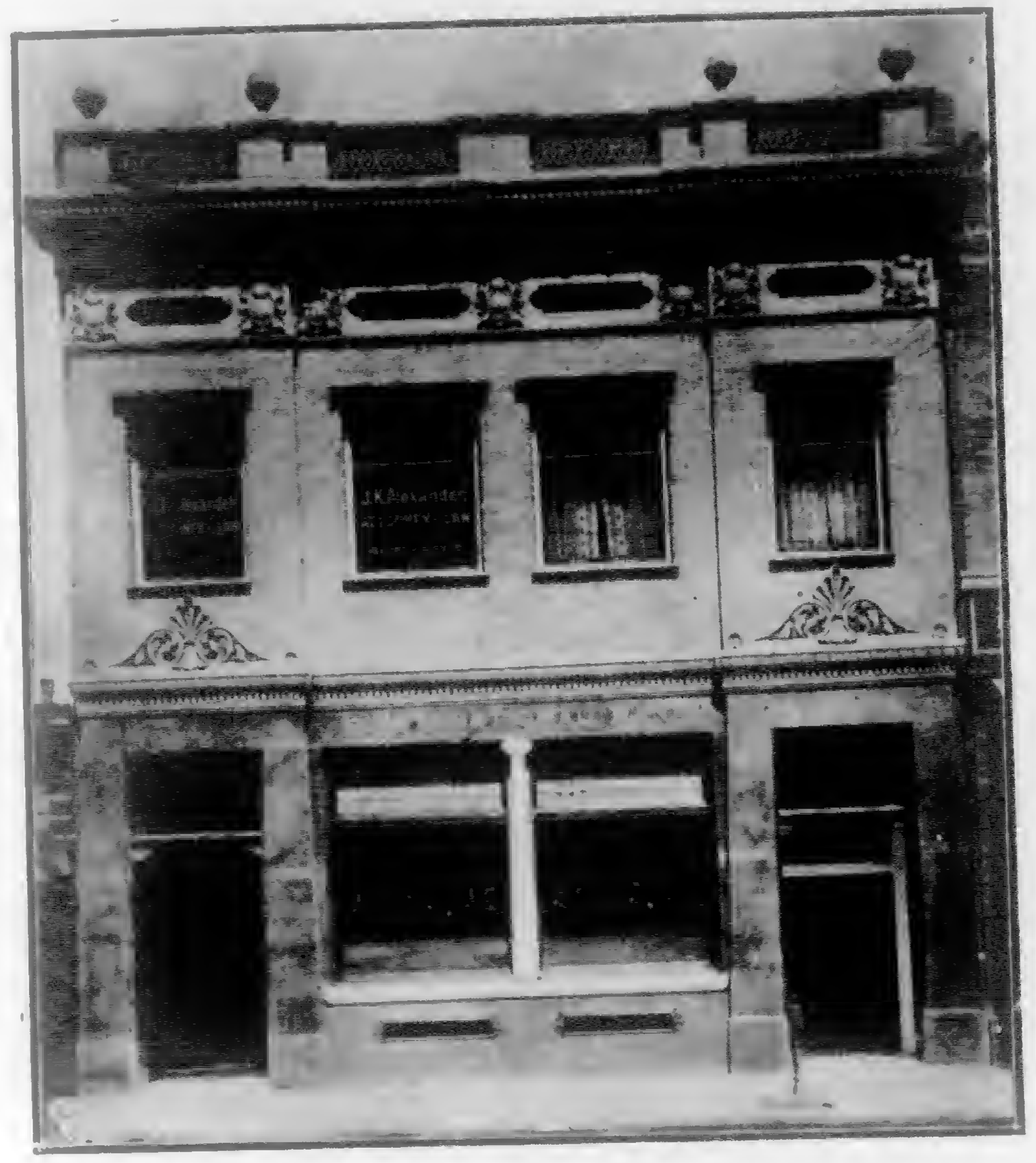


First National Bank, Salinas.
W. H. Weeks, Architect

rience gained by working under some of the leading architects of the East, combined with an early mastery of the many details of safe construction, has made him one of the most practical men in his profession.

Mr. Weeks first began the practise of his profession at Wichita, Kansas, where many of the finest buildings in that city bear testimony to his marked skill and ability.

His first important work in Wichita (when only 19 years of age) was his employment by the Board of Trustees of the Garfield University to take complete charge of the construction of the university building at Wichita, said to be the largest single college building in the United States.

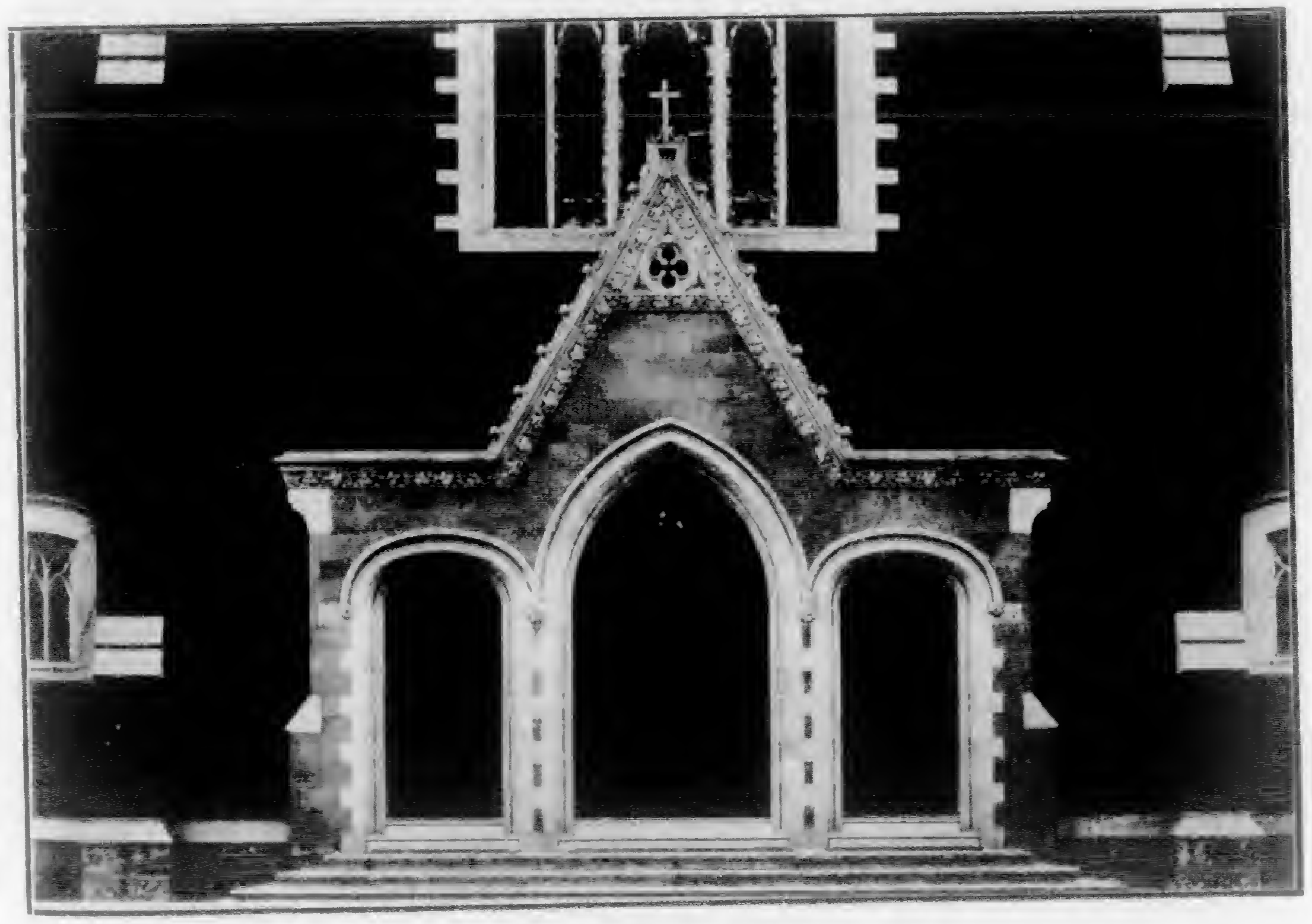
Upon coming to California Mr. Weeks secured a great deal of work from the Spreckels Sugar Company, then located in Watsonville. This necessitated opening an office at that place, which he still makes his headquarters, finding it a convenient center for his work through the central coast counties. In 1905 Mr. Weeks opened an office in the James Flood building, San Francisco, and after the fire he moved to temporary quarters at No. 6 East street, San Francisco.

Outside of the building Mr. Weeks has done in San Francisco and vicinity practically all of the best buildings erected within the last four years, from San Jose to Santa Barbara, have been from his designs, while at the present time he has work under way in nine counties of this State.

One of the best of Mr. Weeks' recent buildings is the Paso Robles bath house, classed by Dr. Simon Baruch of New York, the greatest living authority on water treatment, to be the best equipped in the world.

It is not the exterior of this building that is of the most interest—the interior, with its beauty and finish, calls forth the greatest praise.

Carnegie Library, Santa Cruz, Cal.
W. H. Weeks, Architect



Entrance of Catholic Church, Watsonville, Cal.
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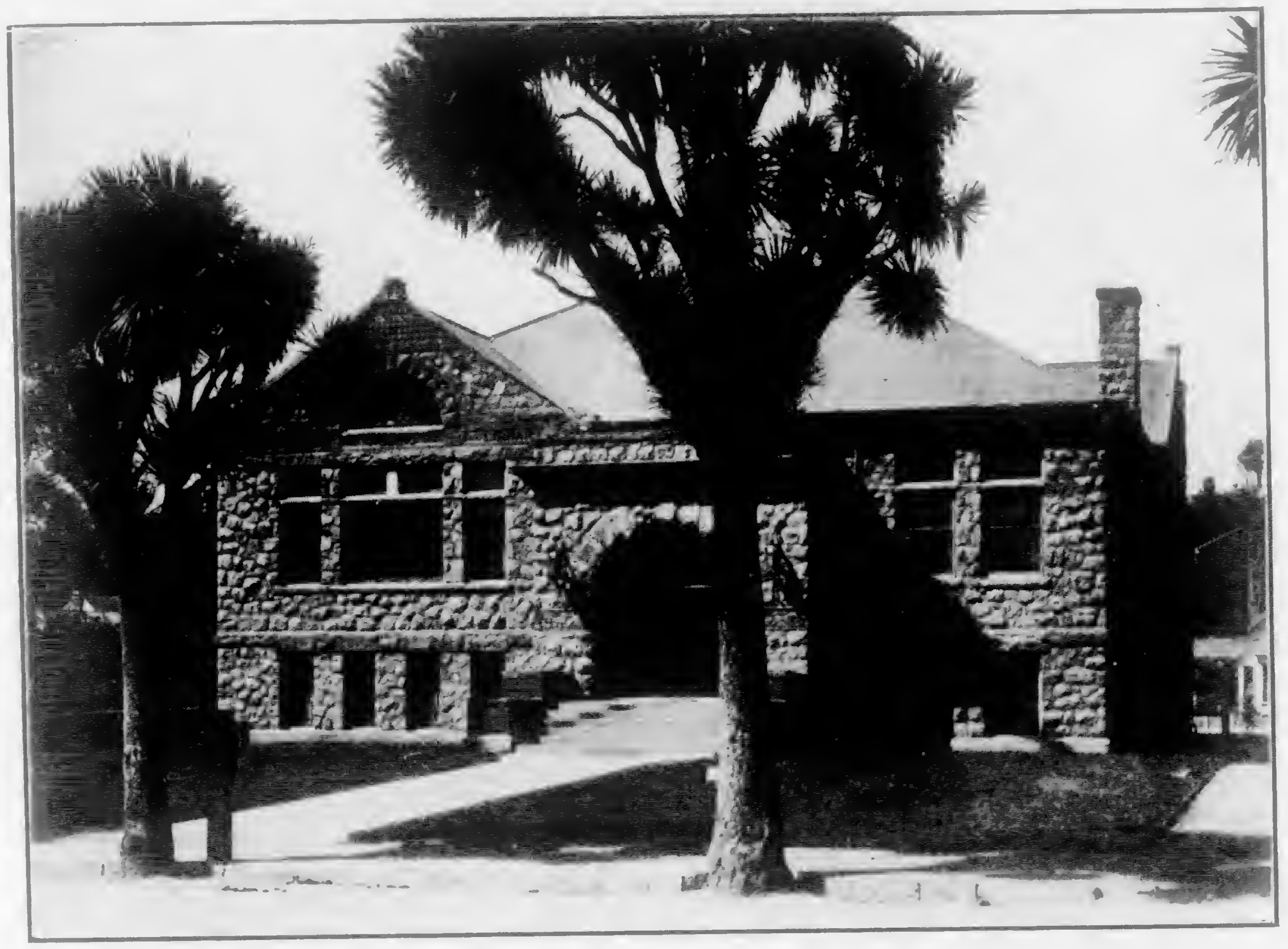

Carnegie Library, Santa Cruz, Cal.
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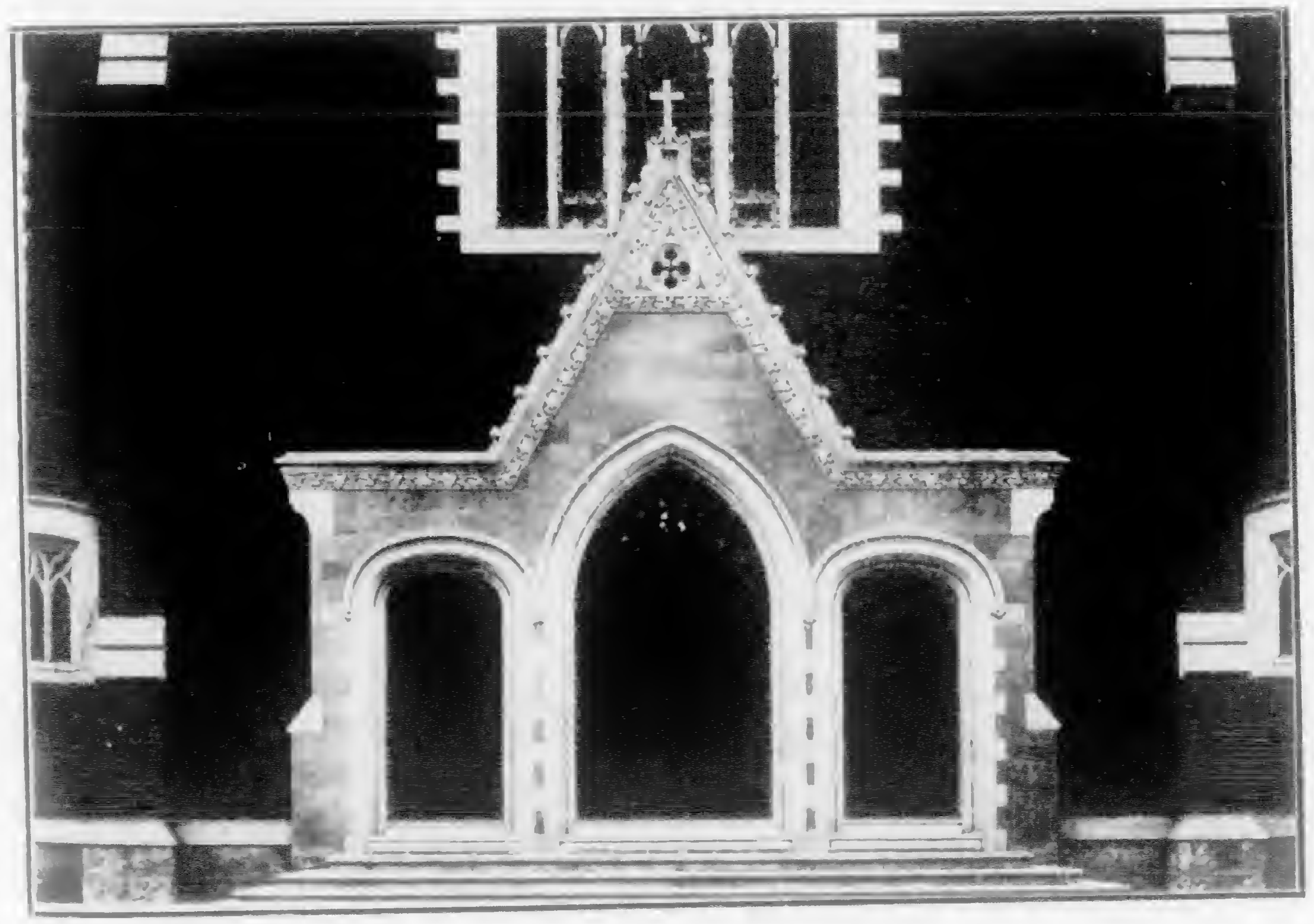

Entrance of Catholic Church Watsonville, Cal.
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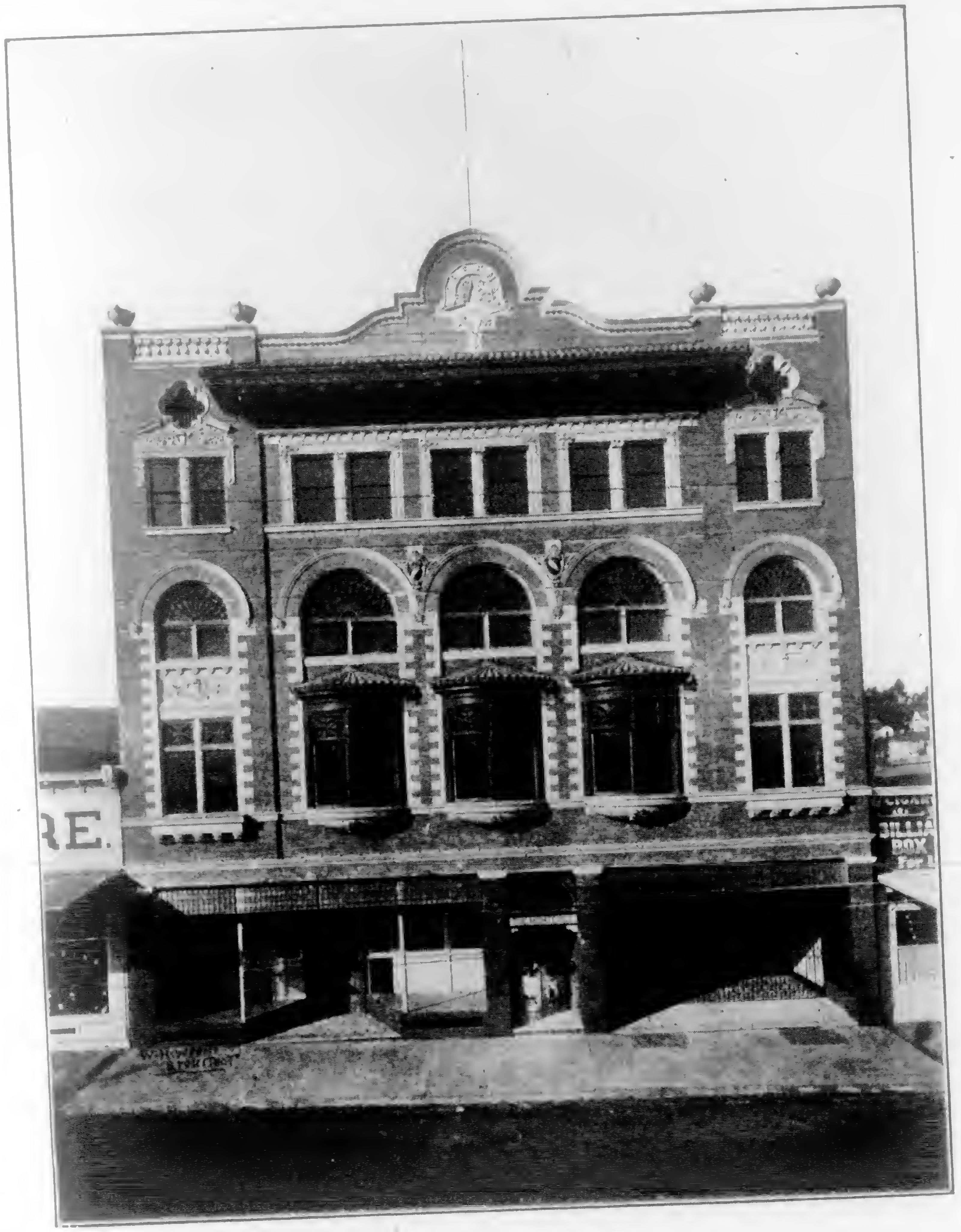
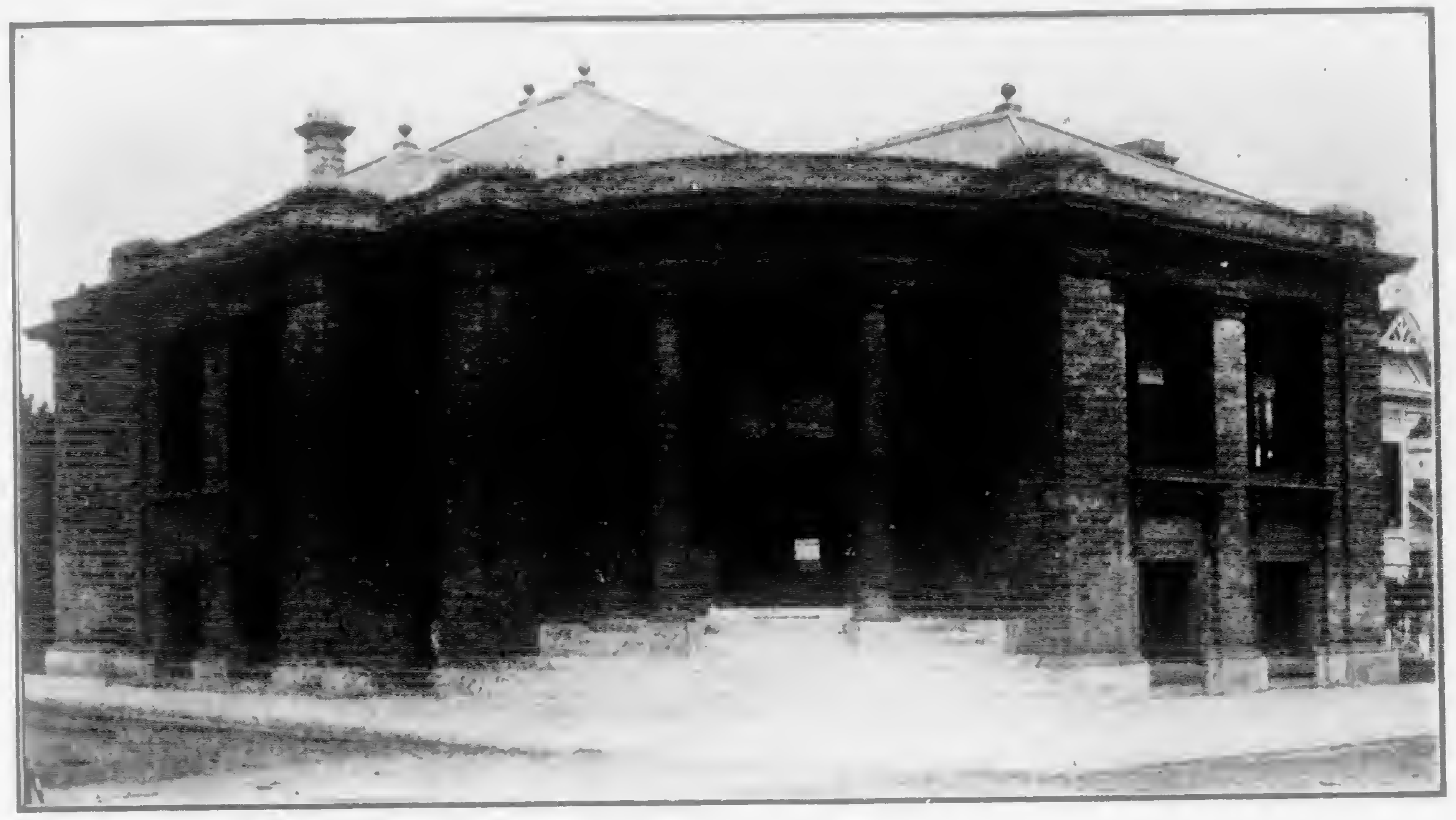


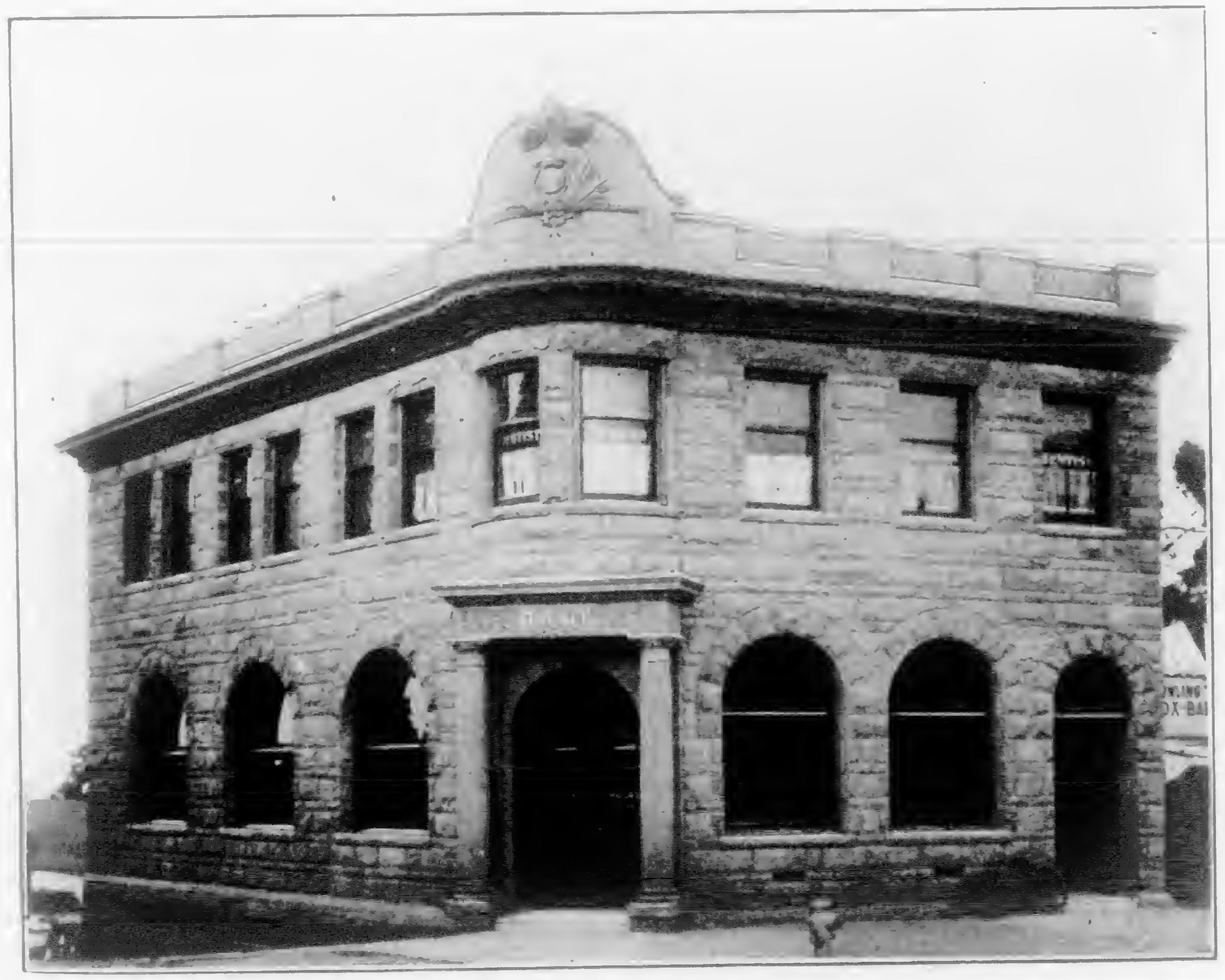
Hotel Monterey, Monterey, Cal.
W. H. Weeks, Architect

The buildings for the Santa Cruz Beach Company, now being completed at Santa Cruz, will excel anything of their kind in this country, and they may well be called Mr. Week's master effort. Many original features have been introduced and when completed the buildings will represent an outlay of $400.000.

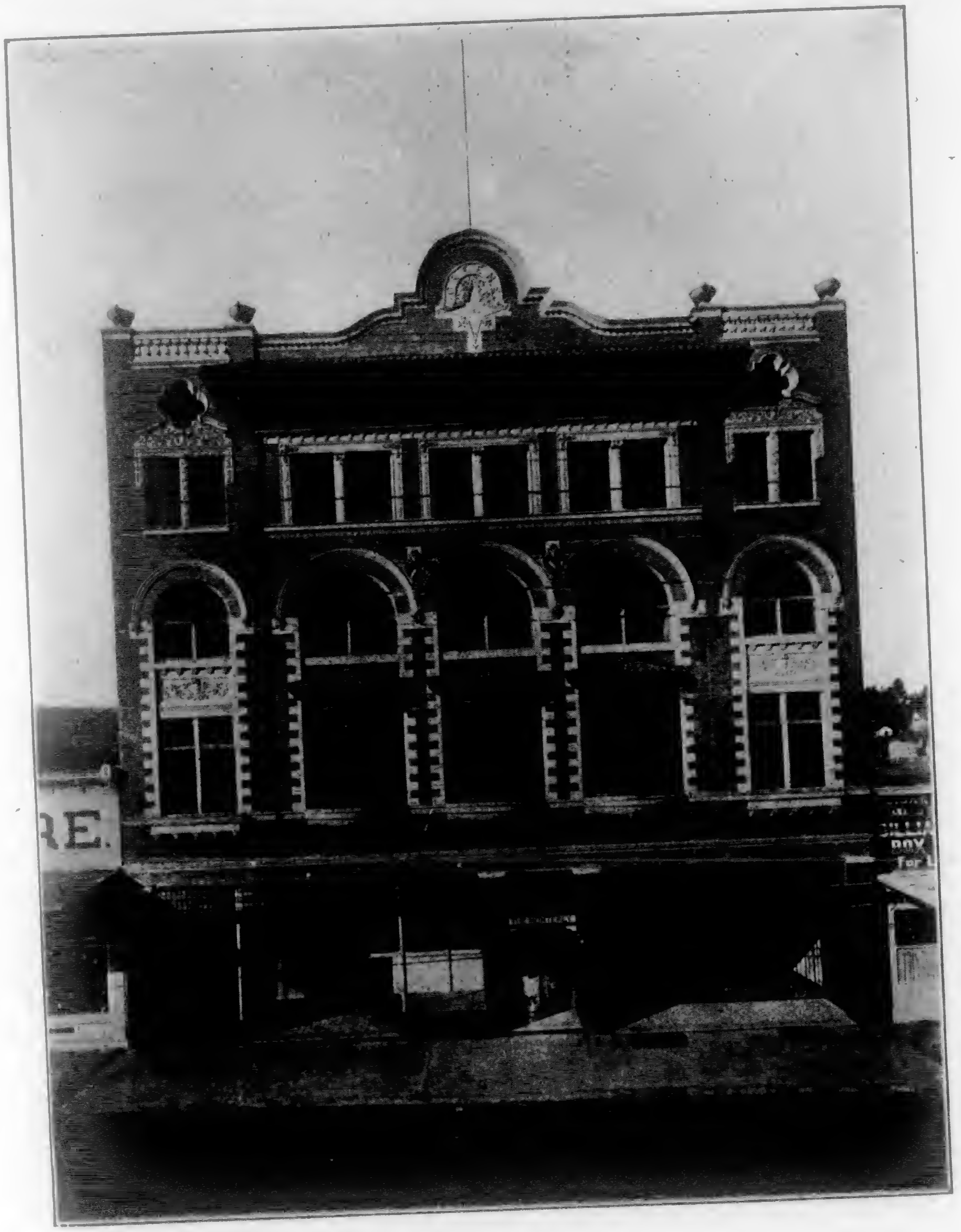
Planned as it is for a pleasure resort where the motto is "Never a dull moment," the Casino was no light problem in the matter of arrangement so as to provide for the many diversified features.



Carnegie Library, Watsonville, Cal.
W. H. Weeks, Architect



Bank of Pacific Grove, Pacific Grove, Cal.
W. H. Weeks, Architect



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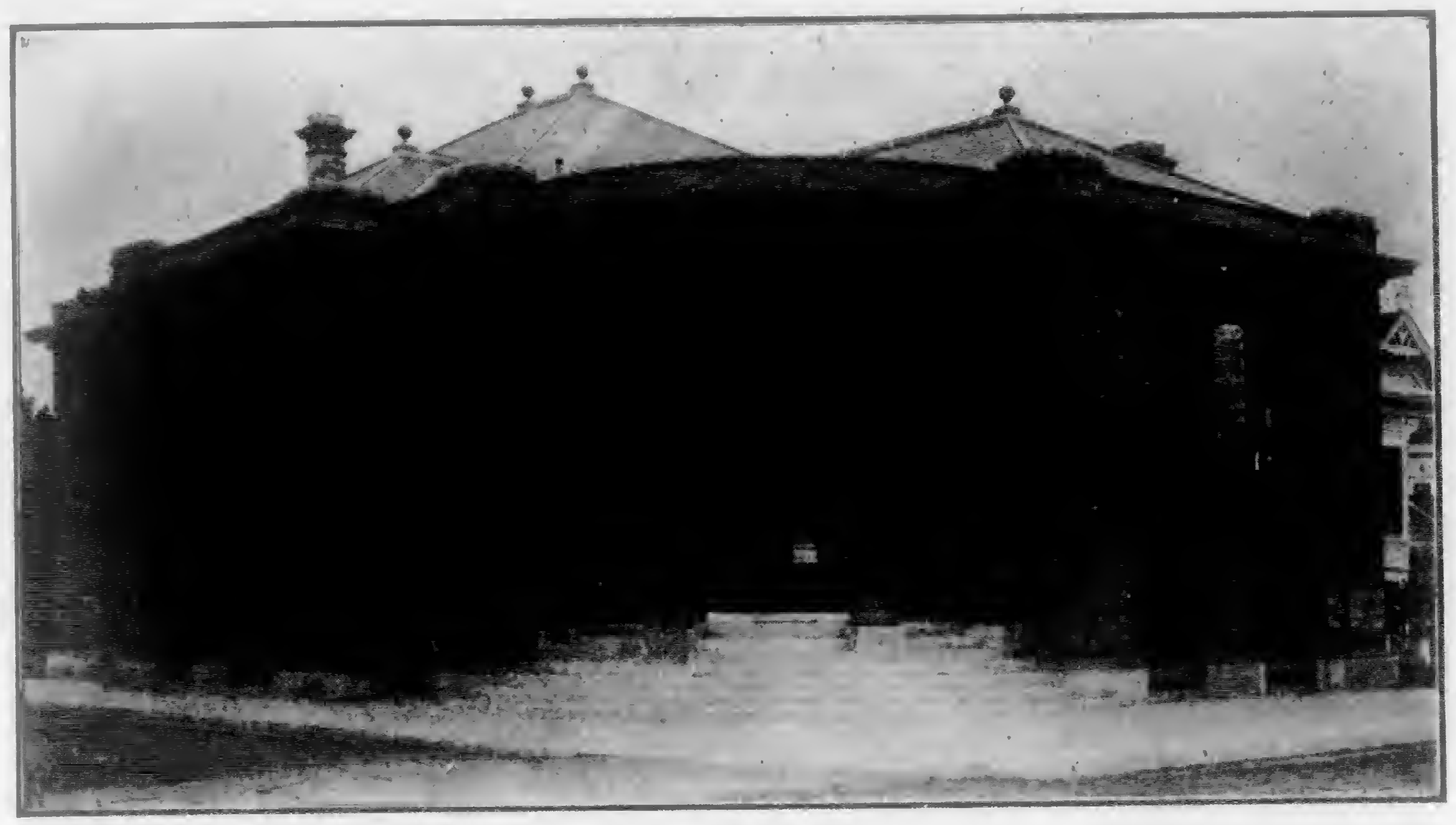
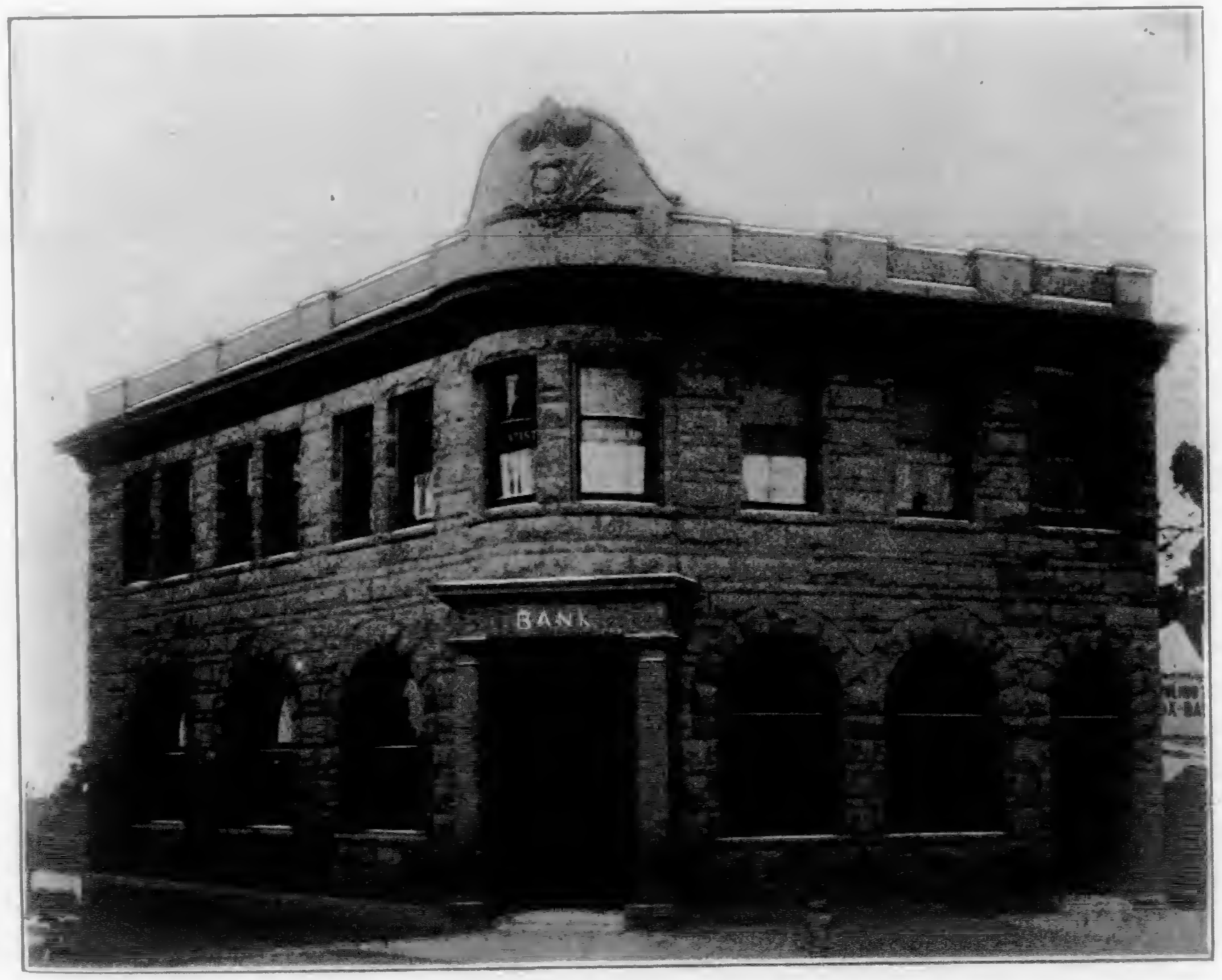
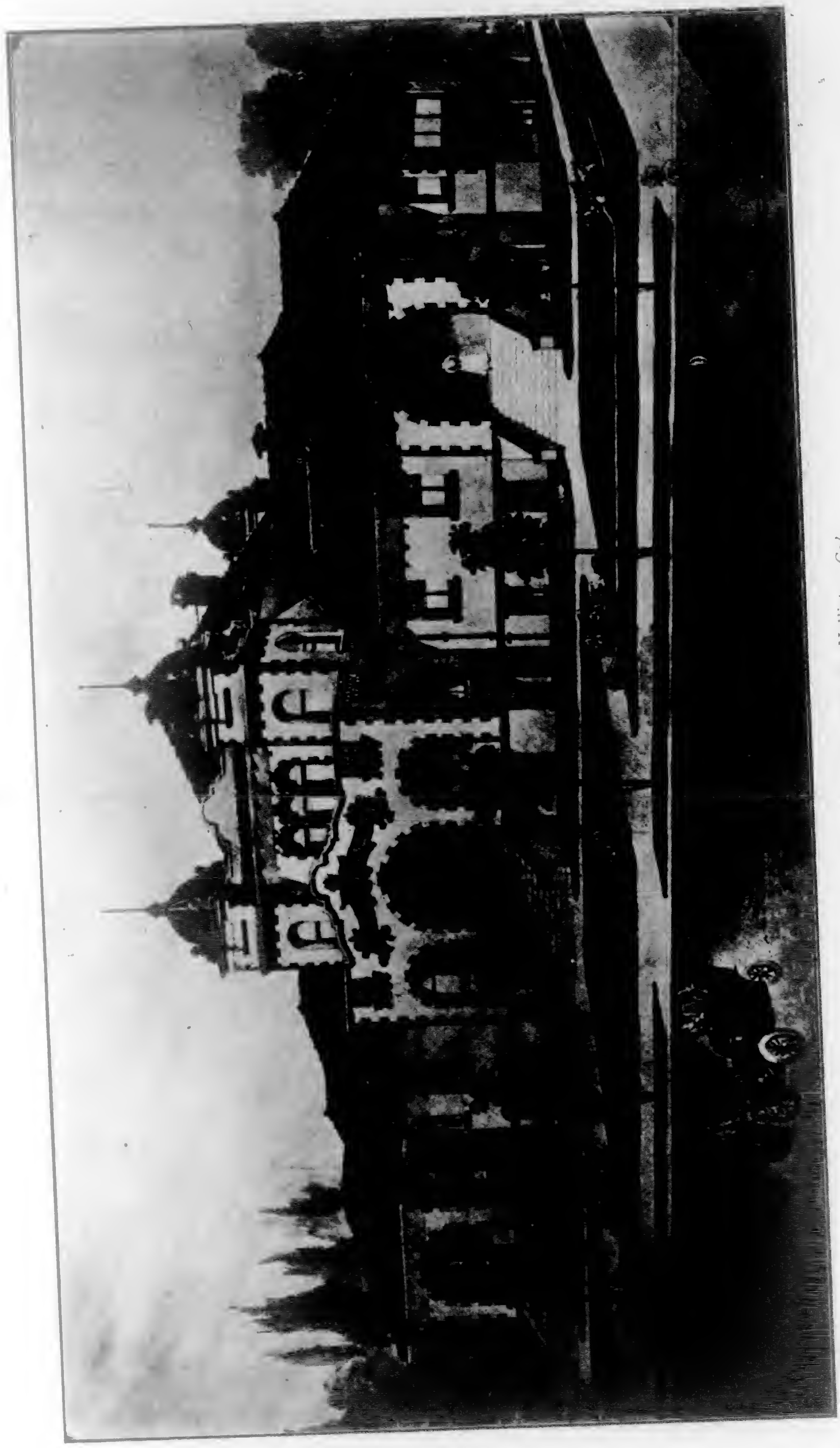


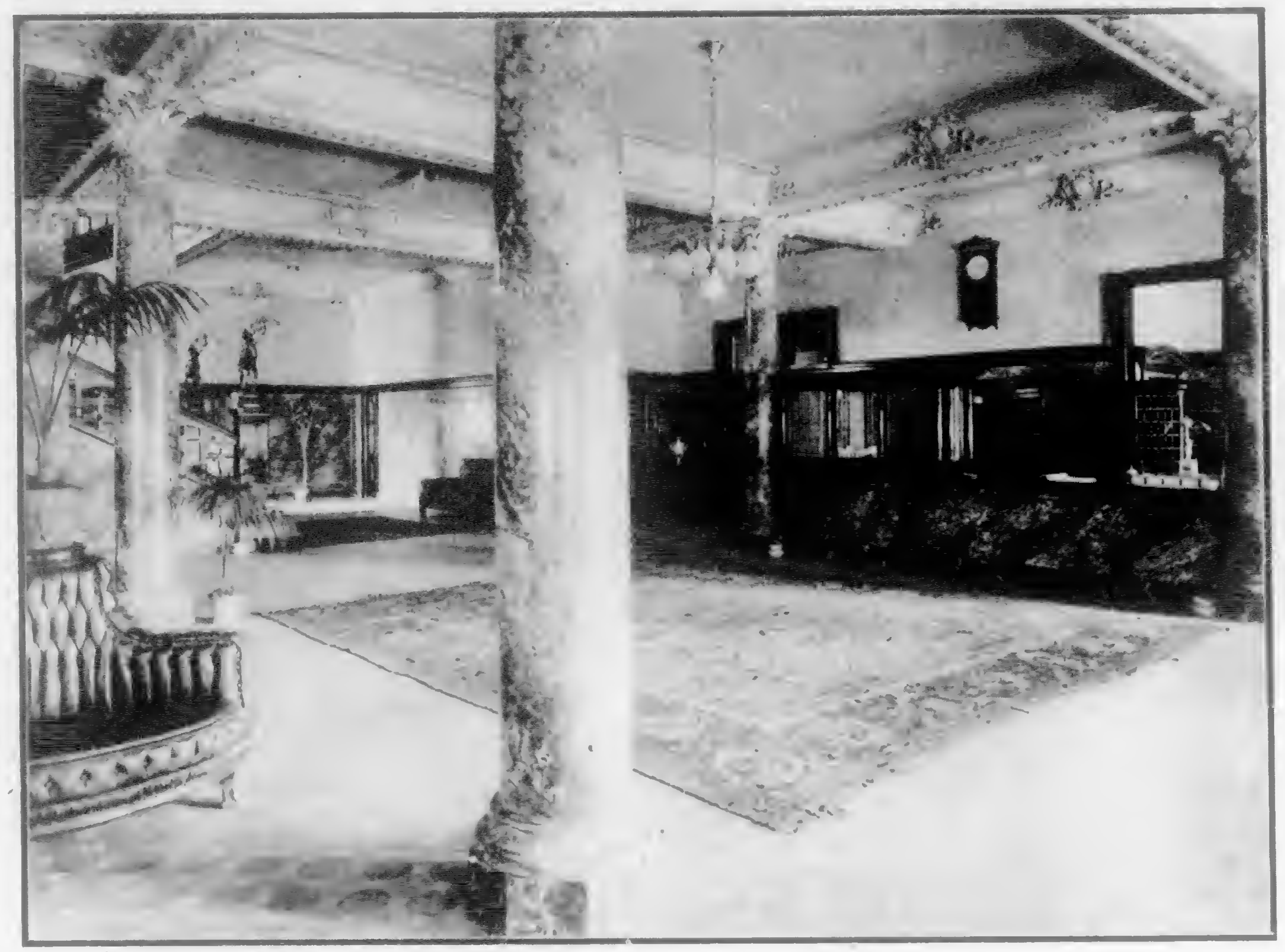
Carnegie Library, Watsonville, Cal.
W. H. Weeks, Architect



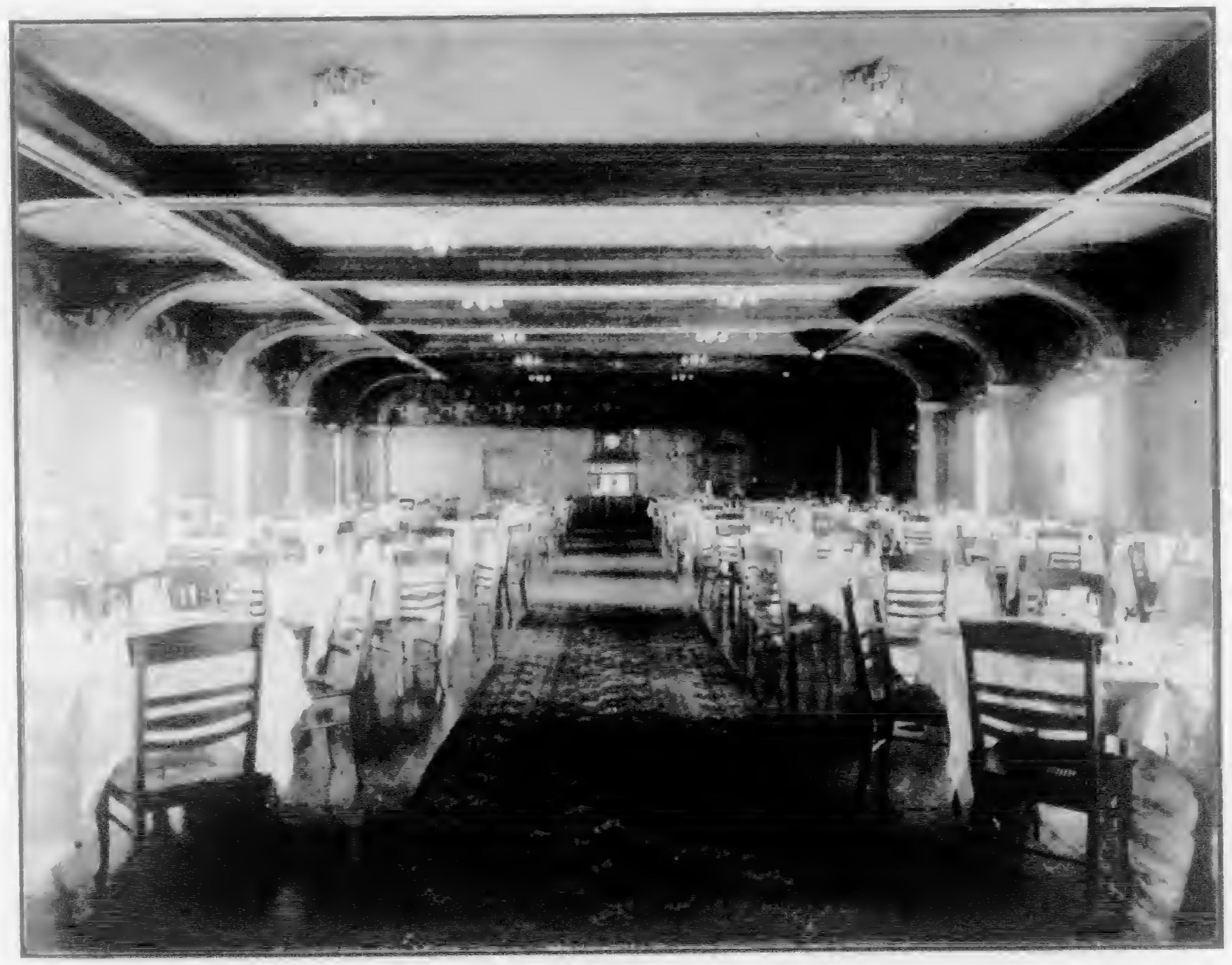
Bank of Pacific Grove, Pacific Grove, Cal.
W. H. Weeks, Architect



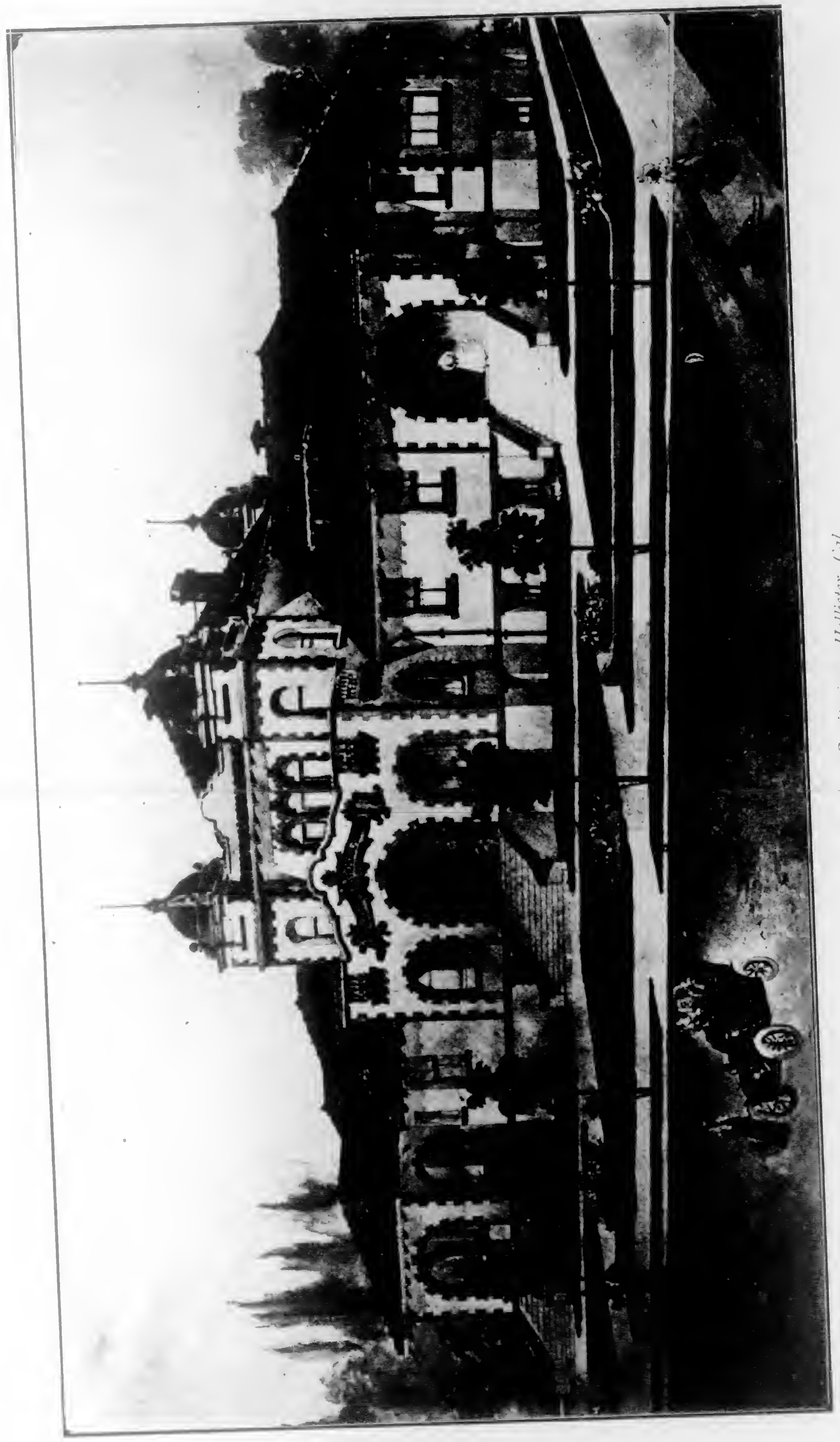
Hazel Hawkins Sanitarium. Hollister. Cal.
W. H. Weeks, Architect



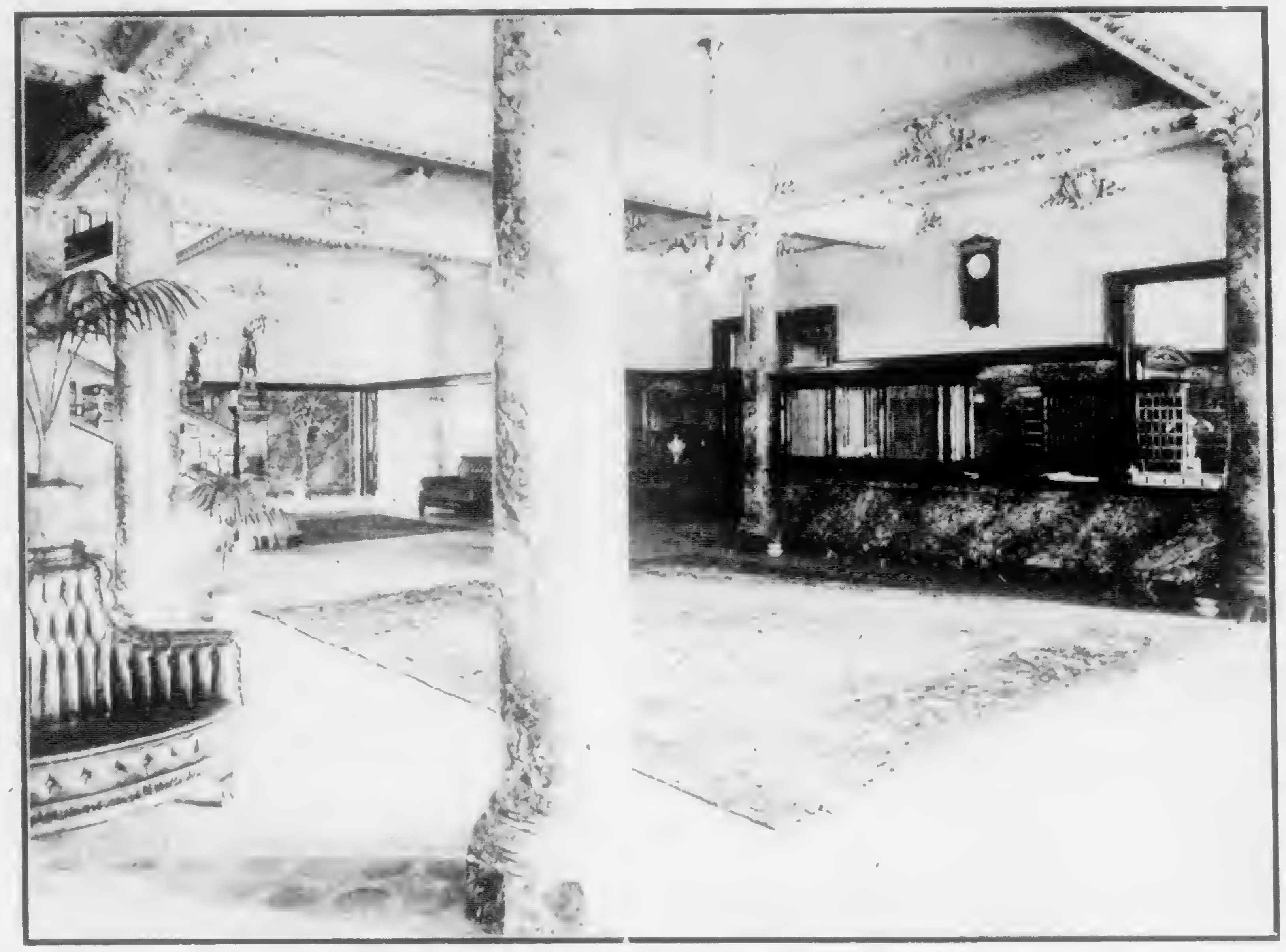
Lobby, the Vendome Hotel, San Jose, Cal.
W. H. Weeks, Architect



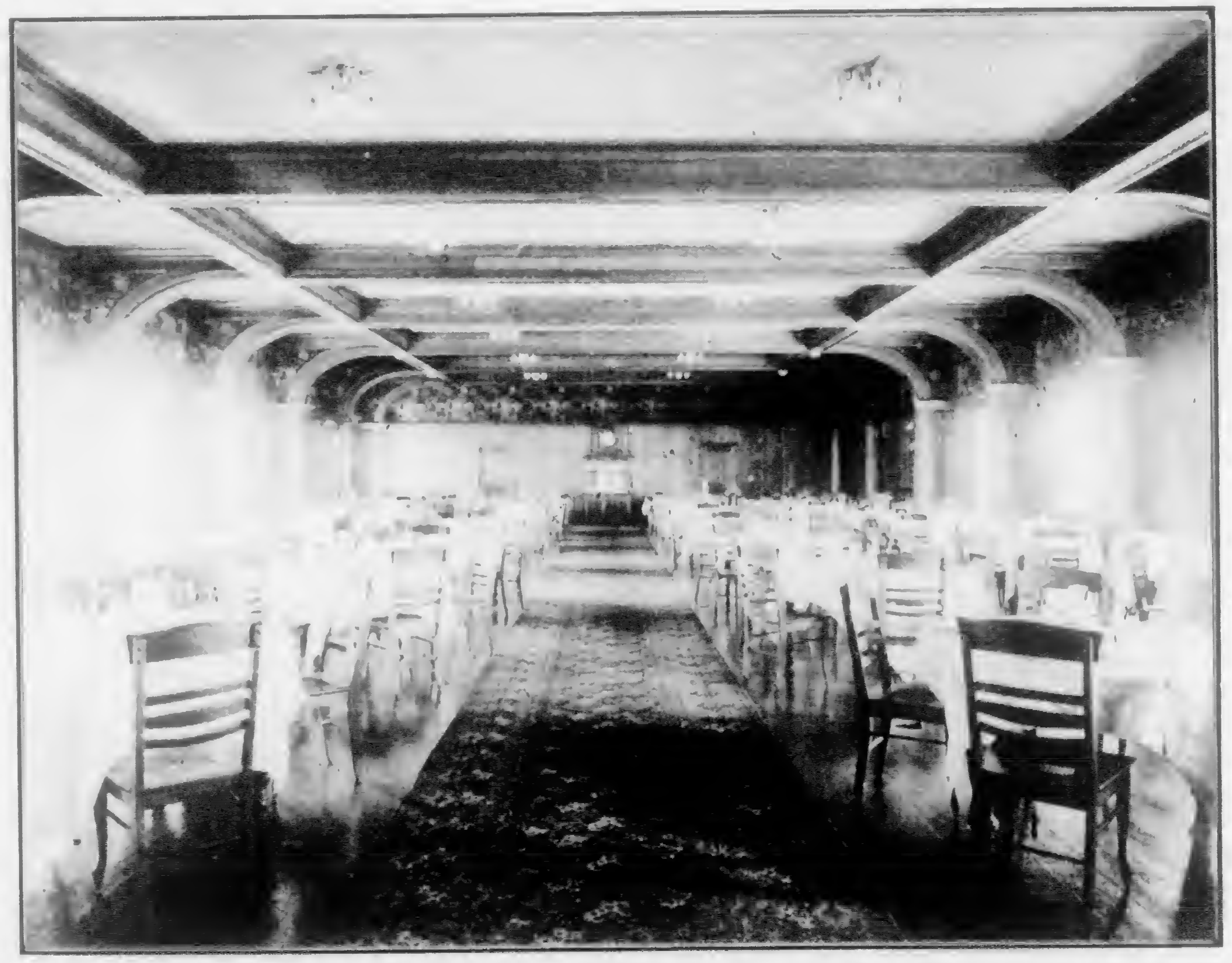
Dining Room, the Hotel Vendome, San Jose



Hazel Hawkins Sanitarium, Hollister, Cal.
W. H. Weeks, Architect

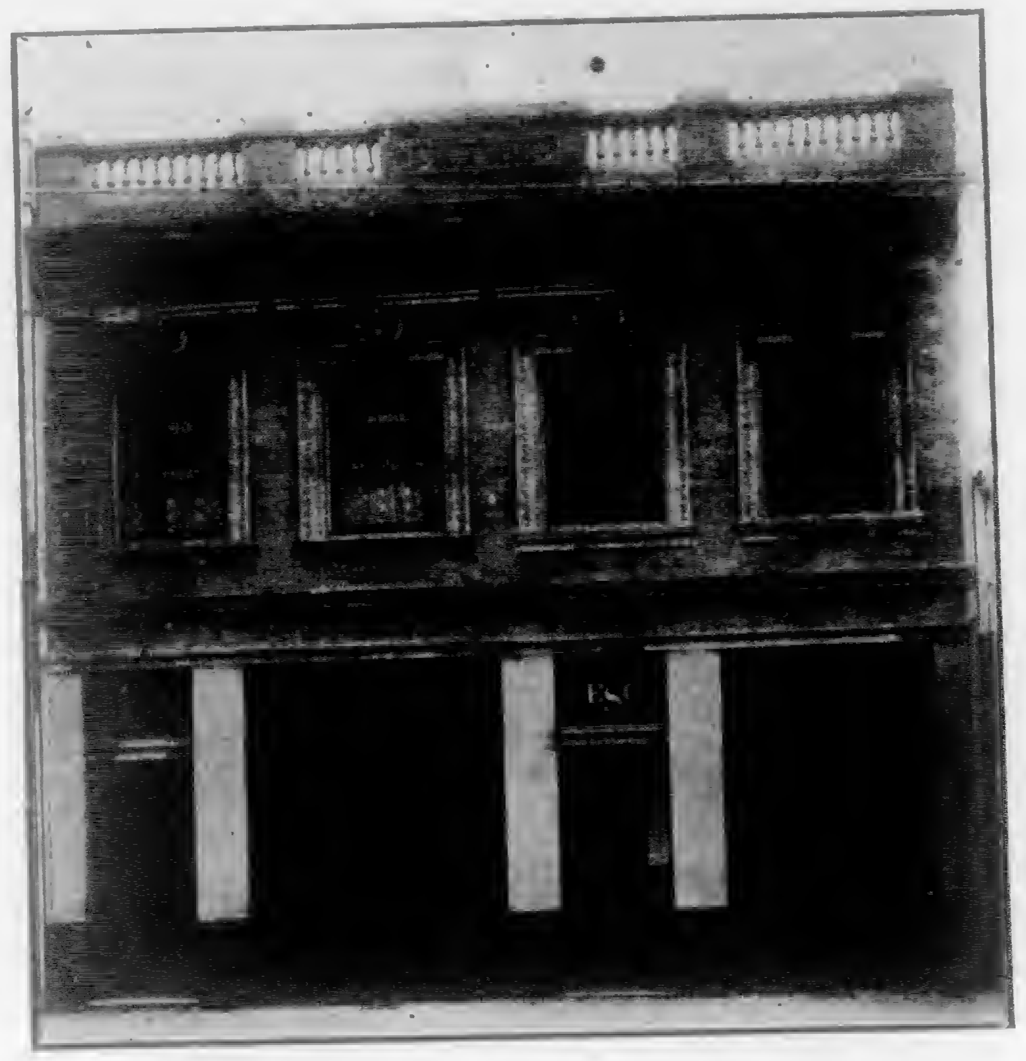


Lobby, the Vendome Hotel, San Jose, Cal.
W. H. Weeks, Architect



Dining Room, the Hotel Vendome, San Jose

First Christian Church, Watsonville, Cal.
W. H. Weeks, Architect



Bank of E. C. Smith, Pacific Grove, Cal.
W. H. Weeks, Architect

The principal feature of the first floor of this building is the large concession room, an emporium in itself, 140 by 100 feet, around which is grouped the many concessions. The center of this room has a beautifully designed ice cream inclosure. From this room the main stairways lead to the ball and grill rooms.

The bar room 40 by 64 feet finished with tile floor and enameled wood work, is decorated in keeping with the room. The ladies' parlor, opening off the concession room, is beautifully finished in California Aspen. The walls and ceilings are tastefully decorated.

The main amusement room on the second floor can be used as a theater, ball room or convention hall. The stage is 45 feet in depth and the Proscenium Arch is 30 by 20 feet. This room, with galleries, will accommodate 1500 people. Opening into the main amusement room is a magnificent grill room 65 by 70 feet overlooking the bay. The windows of this room are all of plate glass 11 feet wide. The beamed and decorated ceiling is supported by ornate columns in keeping with the beautiful panelling of the walls. At the end is an elevated orchestra loft.

Design for the Goldstein Building, Monterey, Cal.
W. H. Weeks, Architect

The T. A. Work Building, Pacific Grove, Cal., built of concrete blocks
W. H. Weeks, Architect

Maple floors are used in all the principal rooms. The kitchen, 40 by 60 feet, is worthy of mention for its completeness. It is divided and fitted up equal to the best hotel kitchens in the state with bake shop, cold-storage plant, etc. Other attractions are the three roof gardens, the largest being on top of the main building. The Natatorium is one of the finest in the world and the second largest on the coast.

The main swimming pool is 80 by 140 feet and of solid cement. The women's and children's pool is 35 by 60 feet. The walls of the pool are lined with enameled terra-cotta and white tile. The immense steel arches over the pools give a beautiful effect. Connected with these pools are 600 dressing rooms. The decorations of the exterior of the buildings are in keeping with their surroundings. Sea life in its varied forms are here represented.

The beautiful Vendome Hotel in San Jose has recently been rebuilt from plans by Mr. Weeks, who is also the architect of the palatial Dougherty mansion now under construction in the Garden City.

* * *

Imports of Portland Cement

The importation of cement in February, 1907, was 100,000,000 pounds, or over 250,000 barrels more than in February, 1906, the total importation for the month being 323,000 barrels of 380 pounds. In the eight months ending with February the imports were nearly four times as much as during the same period a year ago, being 2,282,000 barrels. If importations continue at the same rate until July 1st, the highest record of the past will be equaled if not exceeded.

Exports of domestic cement during February were 60,848 barrels, nearly 2½ times as much as in February last year, but for the eight months the exports, 432,527 barrels, were only 70 per cent of those for the same period last year. The re-exports of foreign cement do not differ greatly from last year, being a little less for the month, 560 barrels and a little more for the eight months period, 12,000 barrels. There are in custom-house storage 52,000 barrels ready for the spring trade.

House of Mrs. E. A. Preble, New Monterey.
W. H. Weeks, Architect

Building the Home

By WILLIAM H. WEEKS, Architect

SINCE the time when man first inhabited this terrestrial globe the building of a home has been one of the most important events of a lifetime. Home is the anchor to many a weary heart and has held man to the best that earth possesses; "Home sweet home" the poet sings and we all can add our voices in sweet accord to sound the praises of earth's dearest habitation.

There is more in this life than mere existence, and as we hurry along life's highway we should pause long enough to enjoy the beautiful things that spring up by the wayside; and what can be more attractive and beautiful than a happy comfortable home?

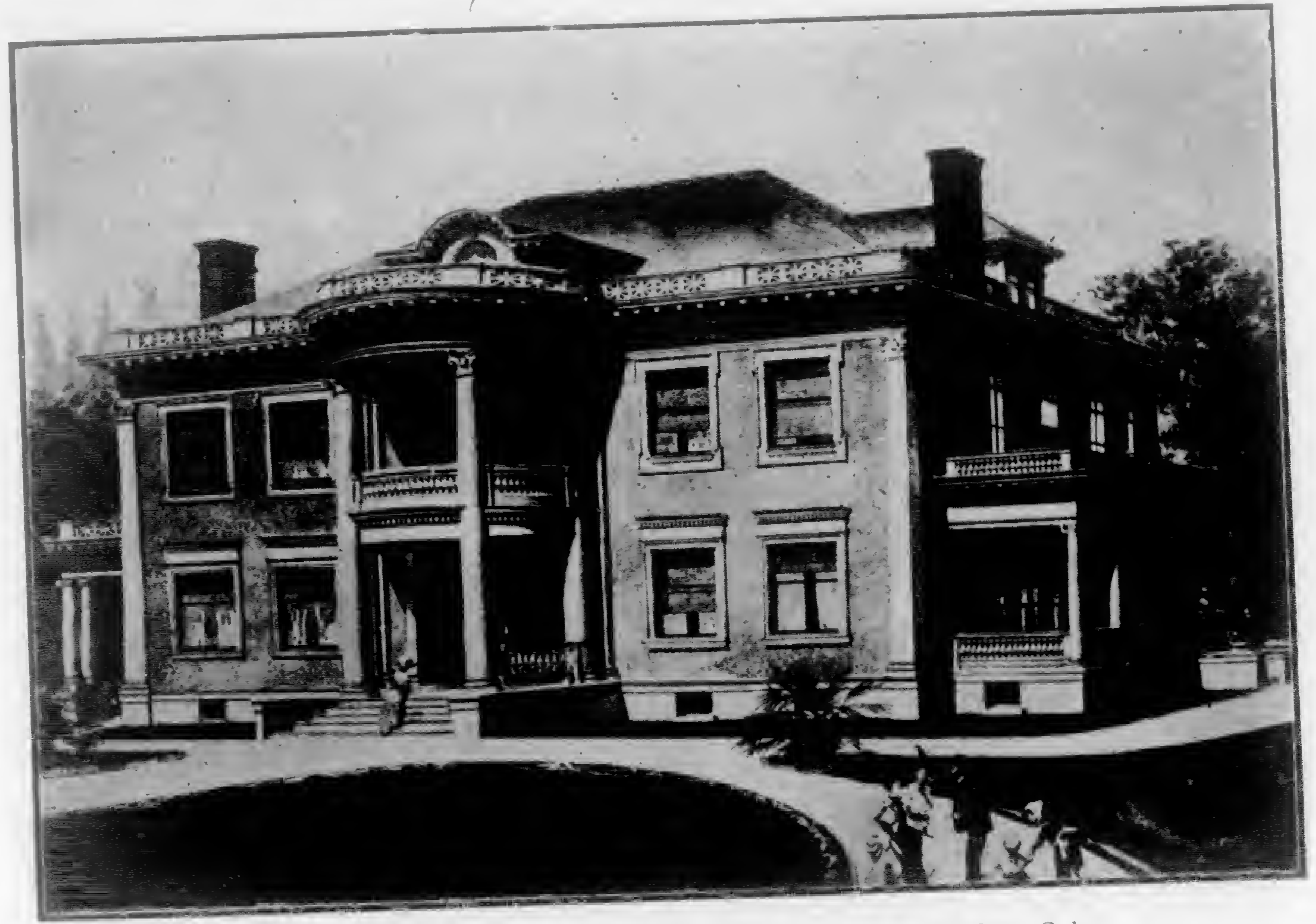
The home being such an important factor in this existence of ours and the building of that home such an important event in life it seems fitting that a man should devote his best thoughts and energies to the planning of it, which when built will stand as a monument to his taste and judgment.

Happy is the man who looks at life through the right window and witnesses the necessity of providing the proper environment for those dearest to him. Then let the home be artistic and comfortable and finished in keeping with the means at your disposal. Provide a home for your family that will be in keeping with the best attributes of your nature, a home that will not only be a credit and a pleasure to you but also to those depending upon you.

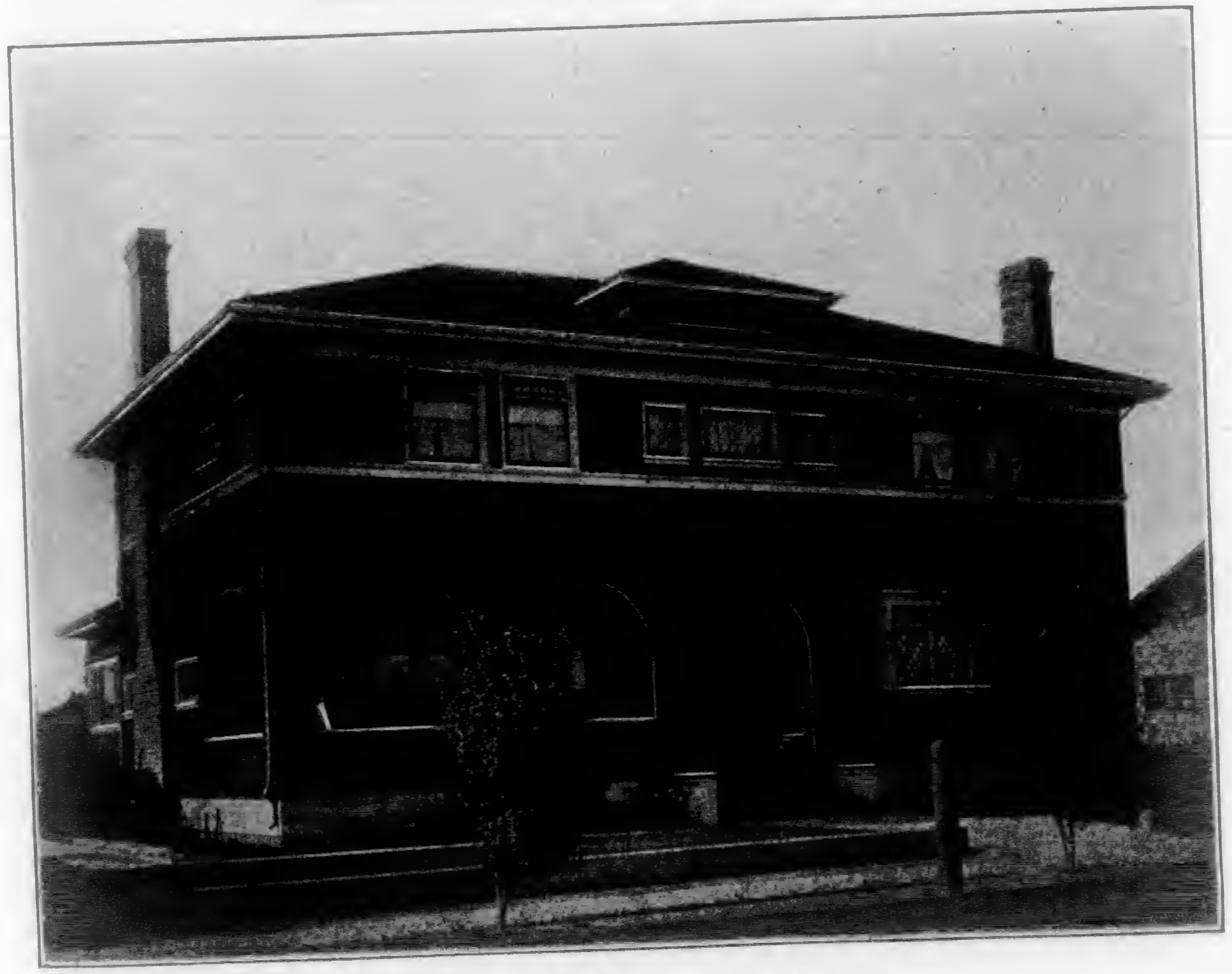
Do not proceed blindly and consider the planning of your dwelling safe in incompetent hands, and after it is too late lament the fact that you did not proceed with more deliberation and get the best possible value for your money in an attractive and comfortable home.

Interior House of Mrs. E. A. Preble, New Monterey, Cal.
W. H. Weeks, Architect

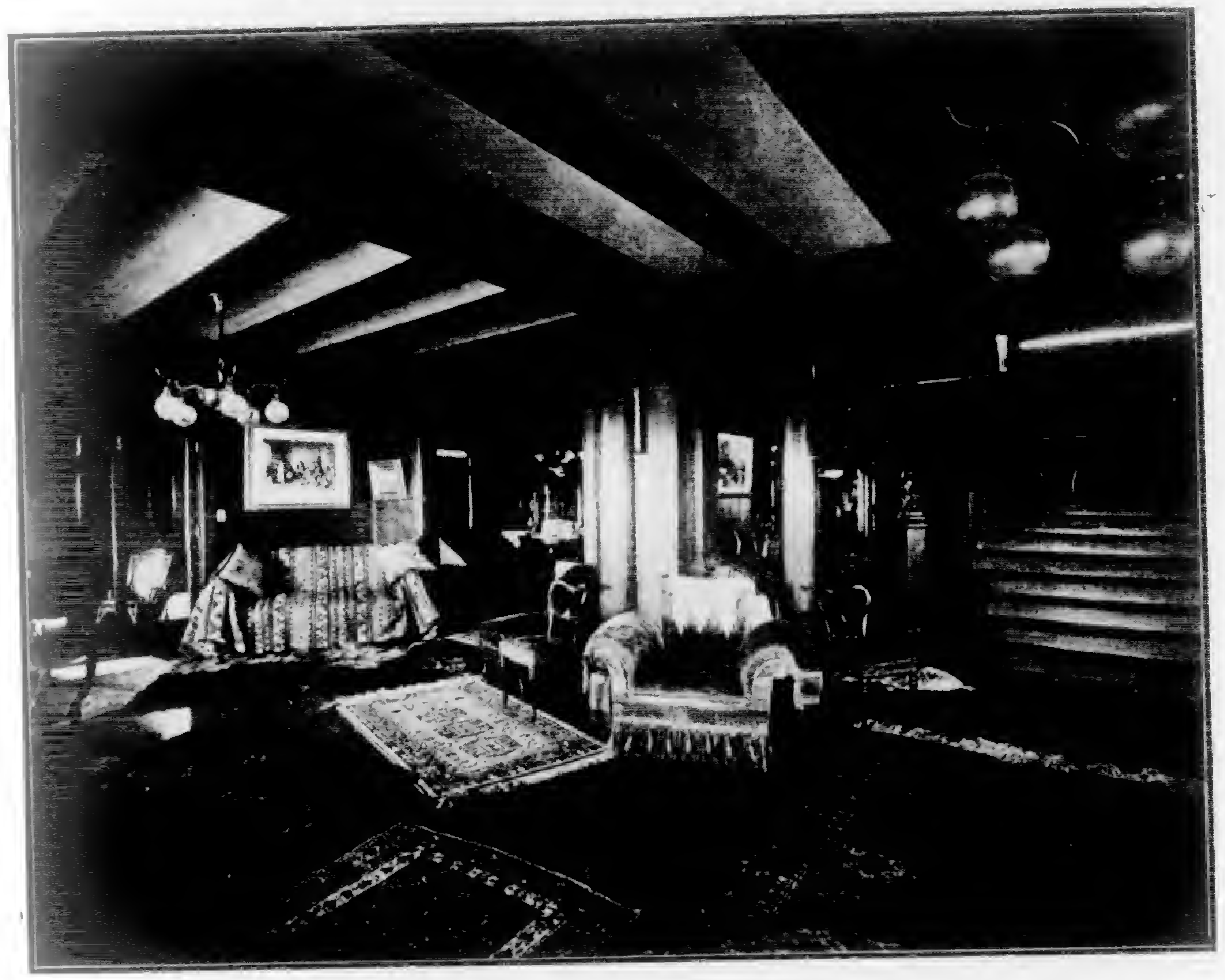
Interior House of Mrs. E. A. Preble, New Monterey, Cal.
W. H. Weeks, Architect



Wash Drawing of House for Mrs. W. P. Dougherty, San Jose, Cal.
W. H. Weeks, Architect
Millwork by Santa Clara Valley Mill and Lumber Co.



Residence of C. H. Langley, Watsonville, Cal.
W. H. Weeks, Architect



Interior House of Mrs. E. A. Preble, New Monterey, Cal.
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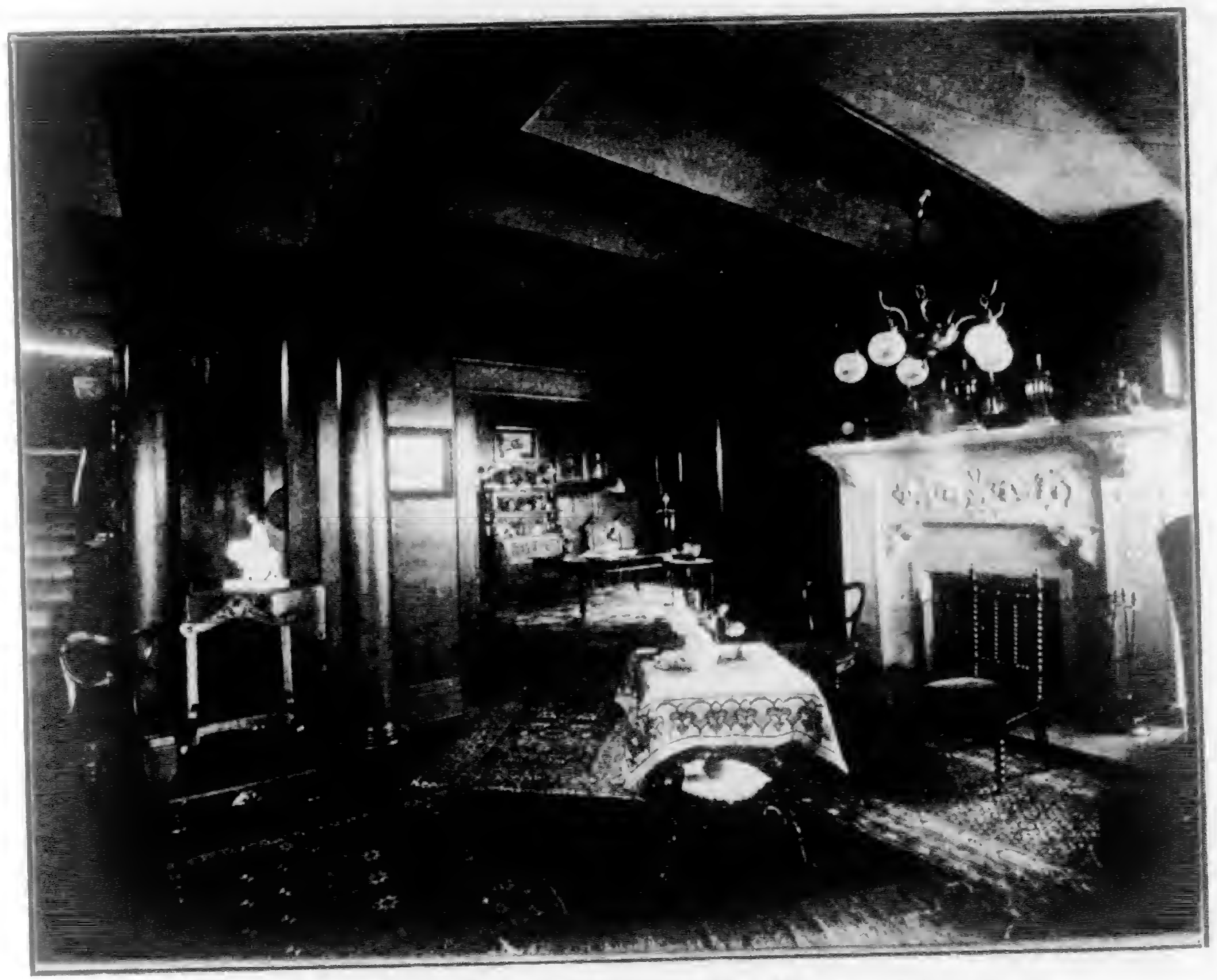

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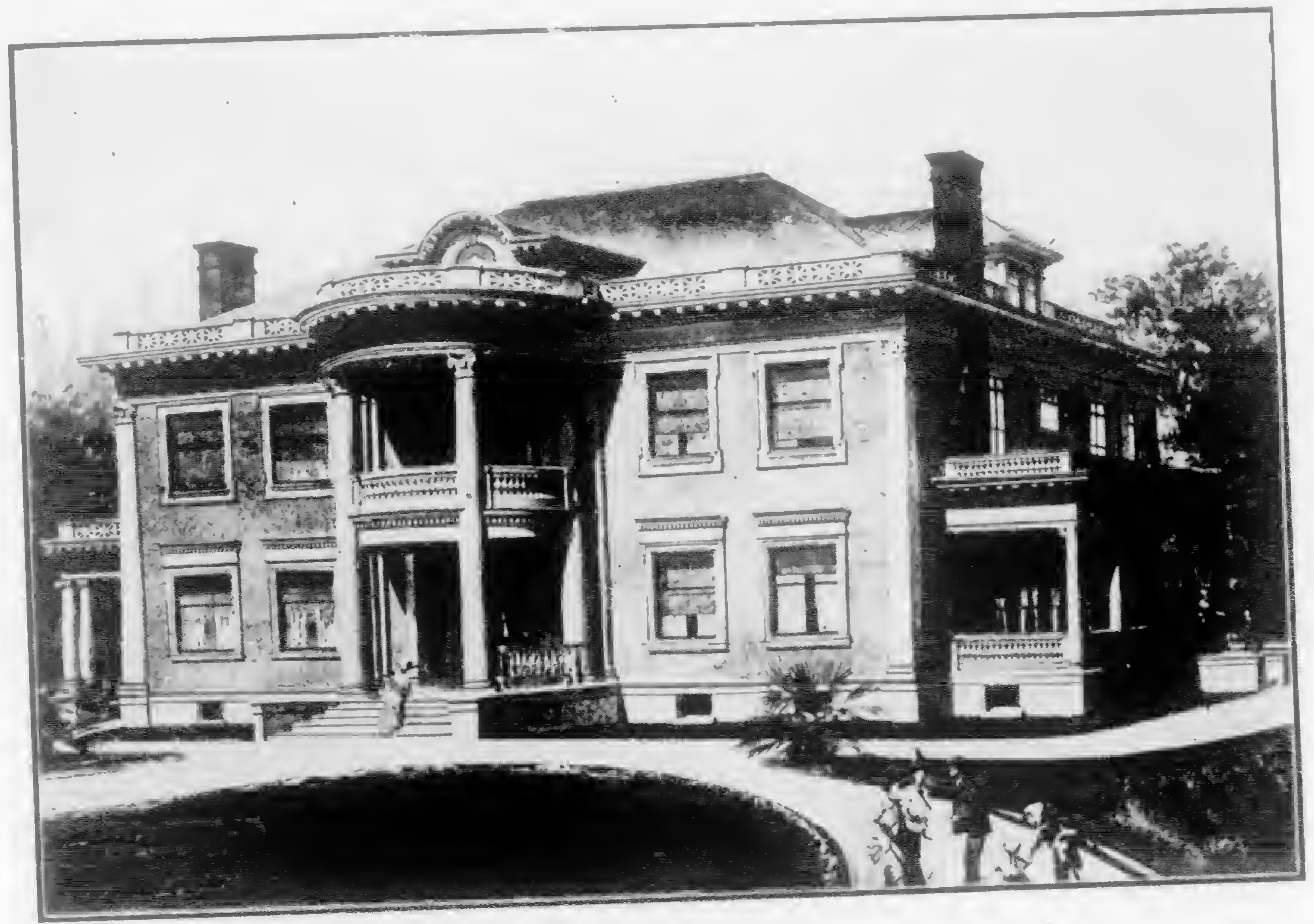

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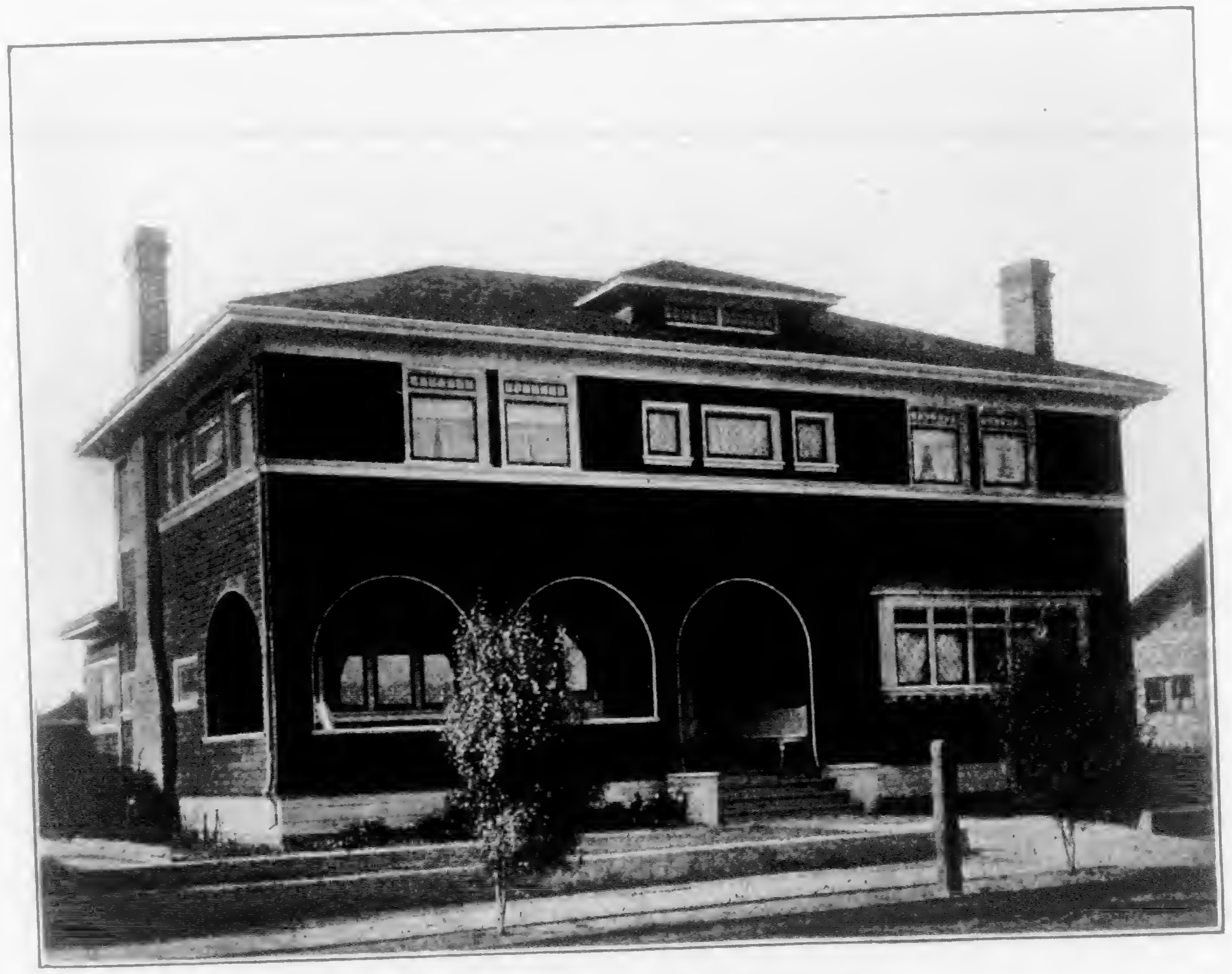

Residence of C. H. Langley, Watsonville, Cal.
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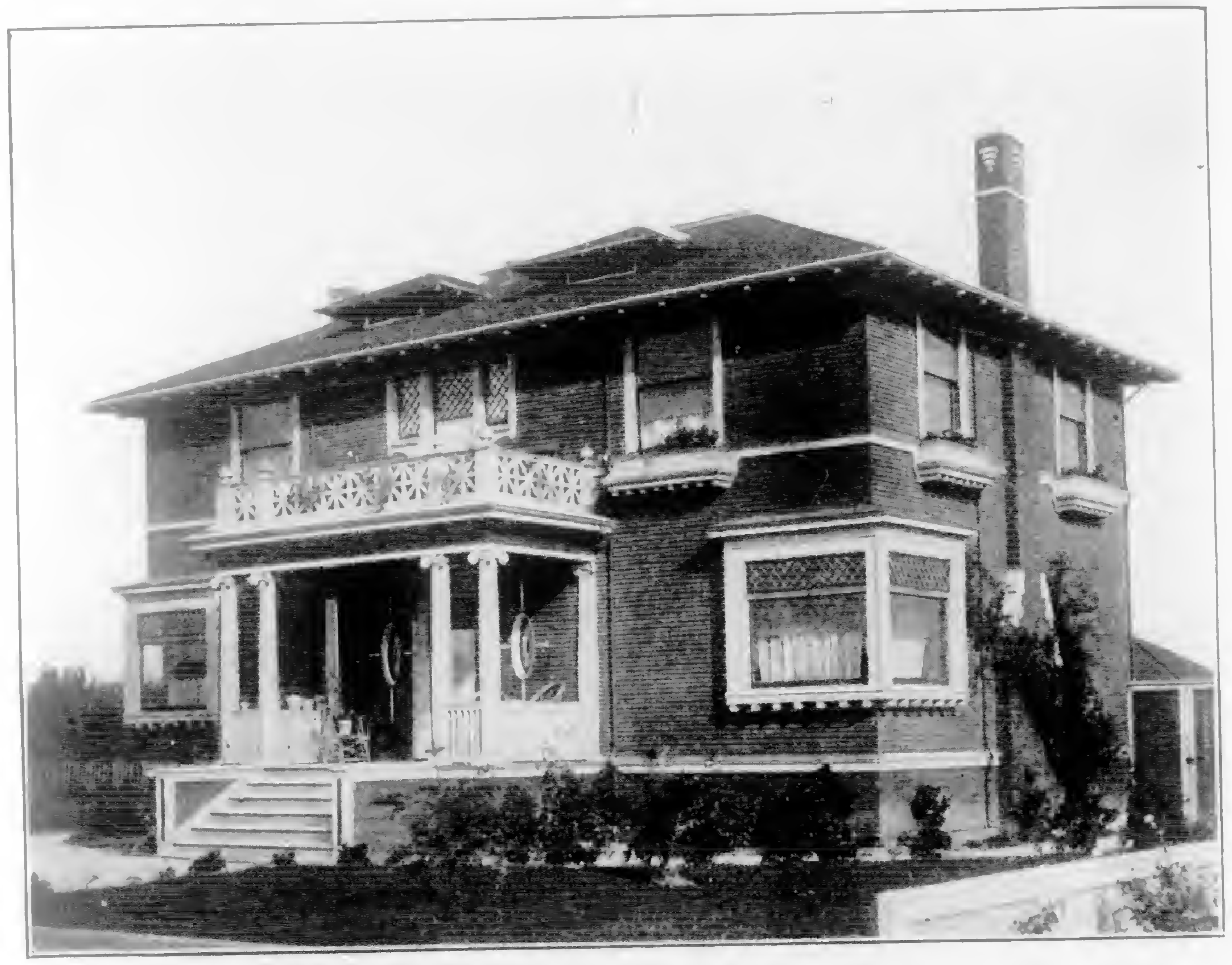
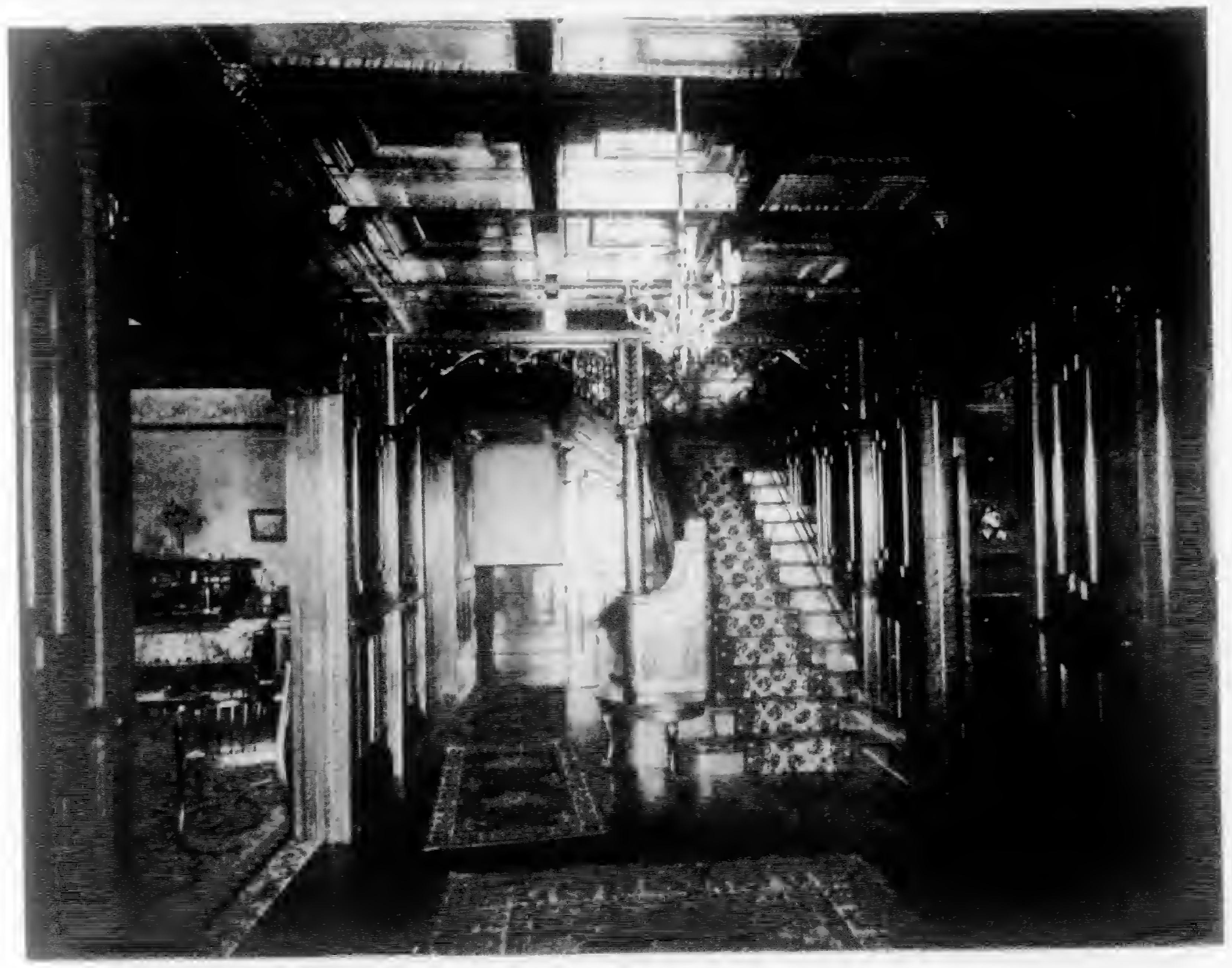
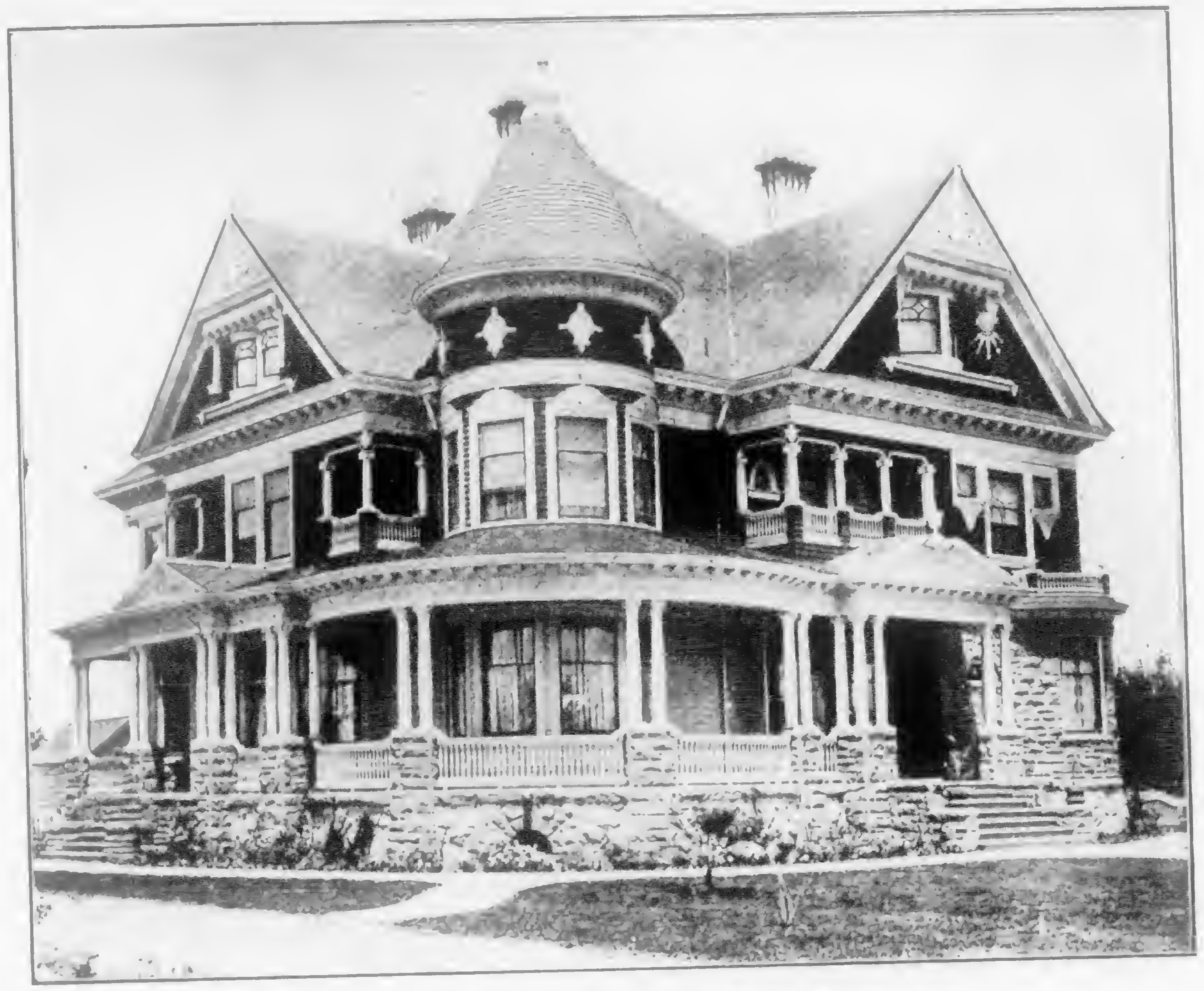


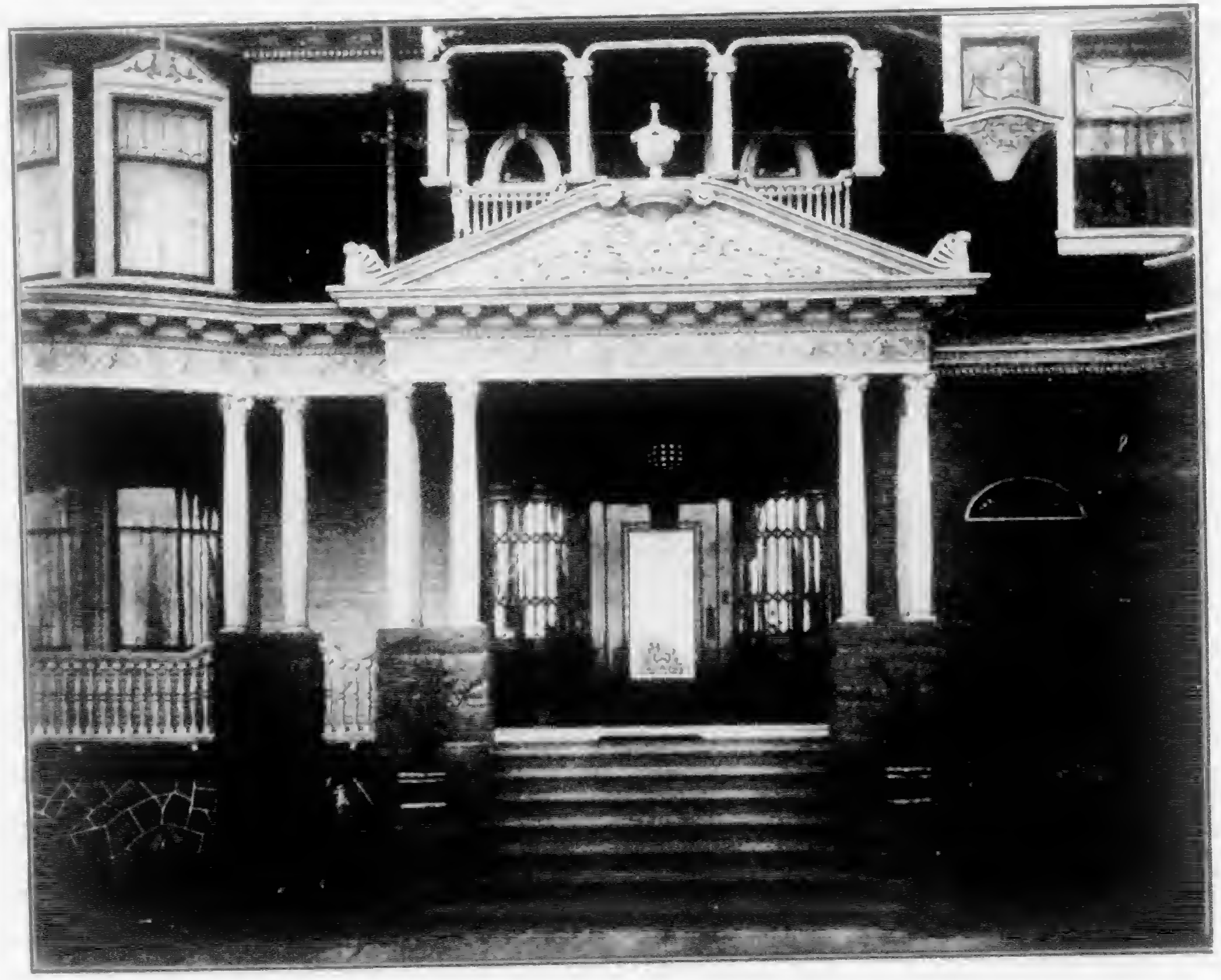
Residence of H. A. V. Torchiana, Watsonville, Cal.



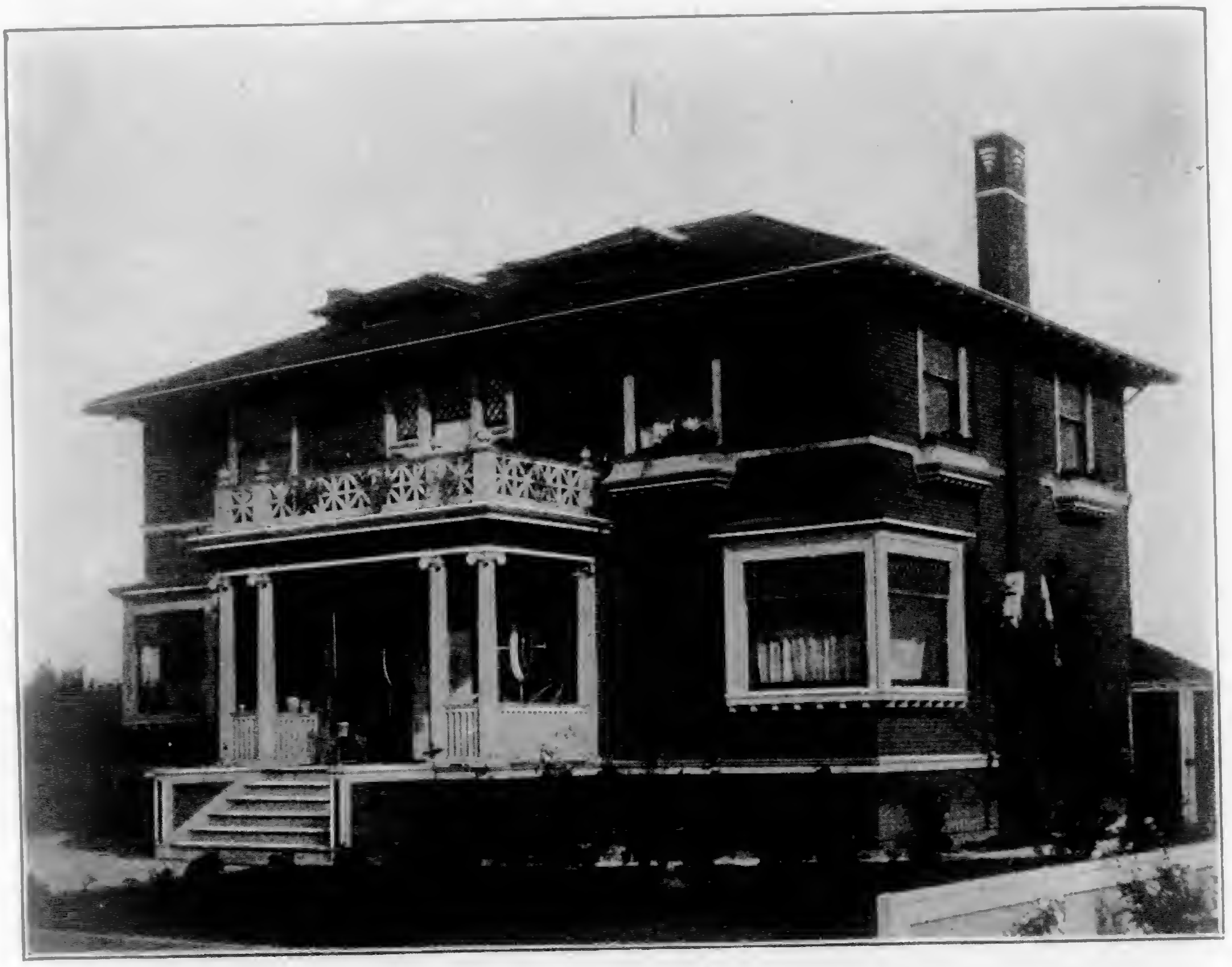
Interior of Residence of W. C. Waters, Streckeles, Cal.



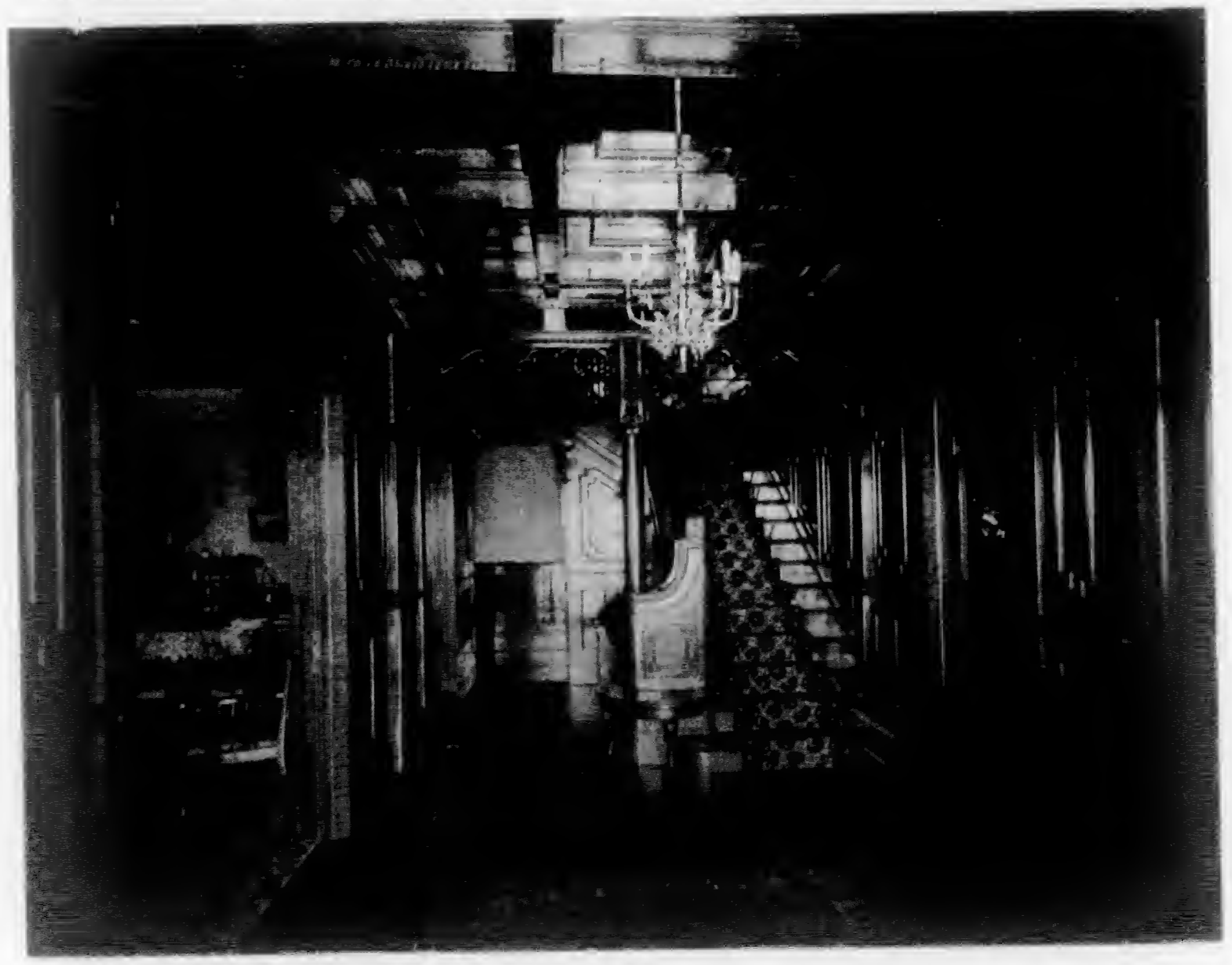
Residence of M. B. Tuttle, Watsonville, Cal.
W. H. Weeks, Architect



Entrance of Tuttle Residence, Watsonville, Cal.



Residence of H. A V. Torchiana Watsonville Cal.



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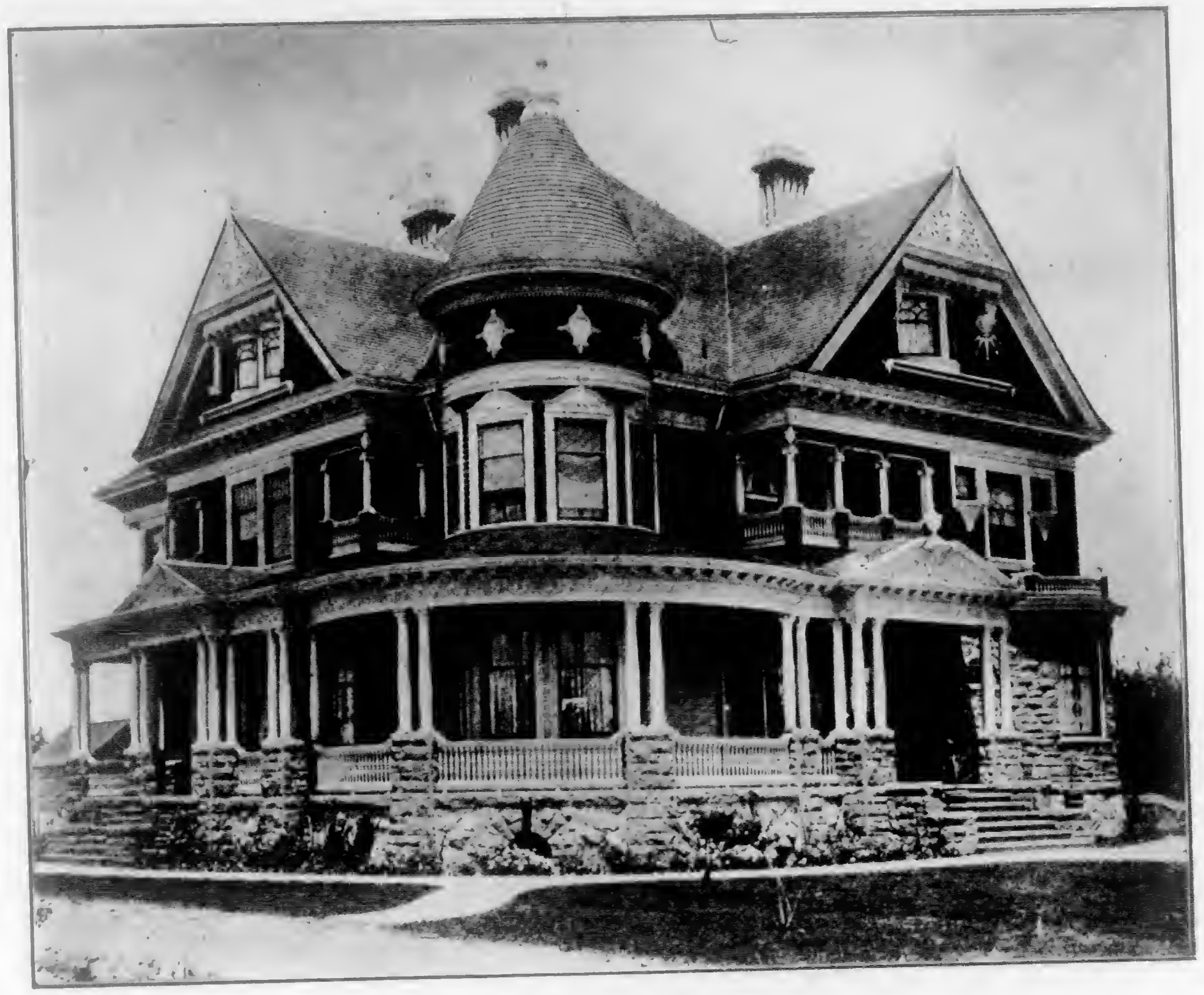
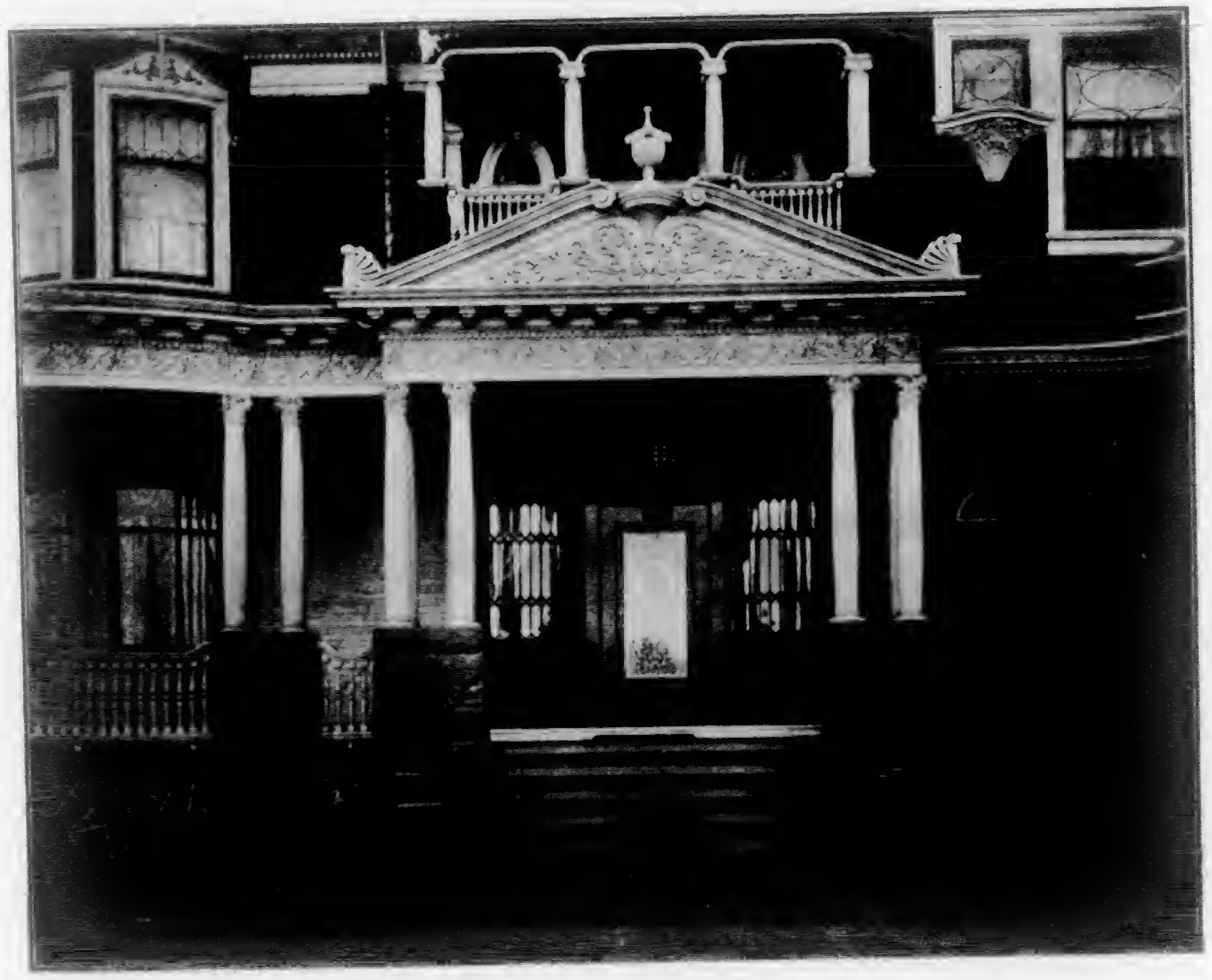
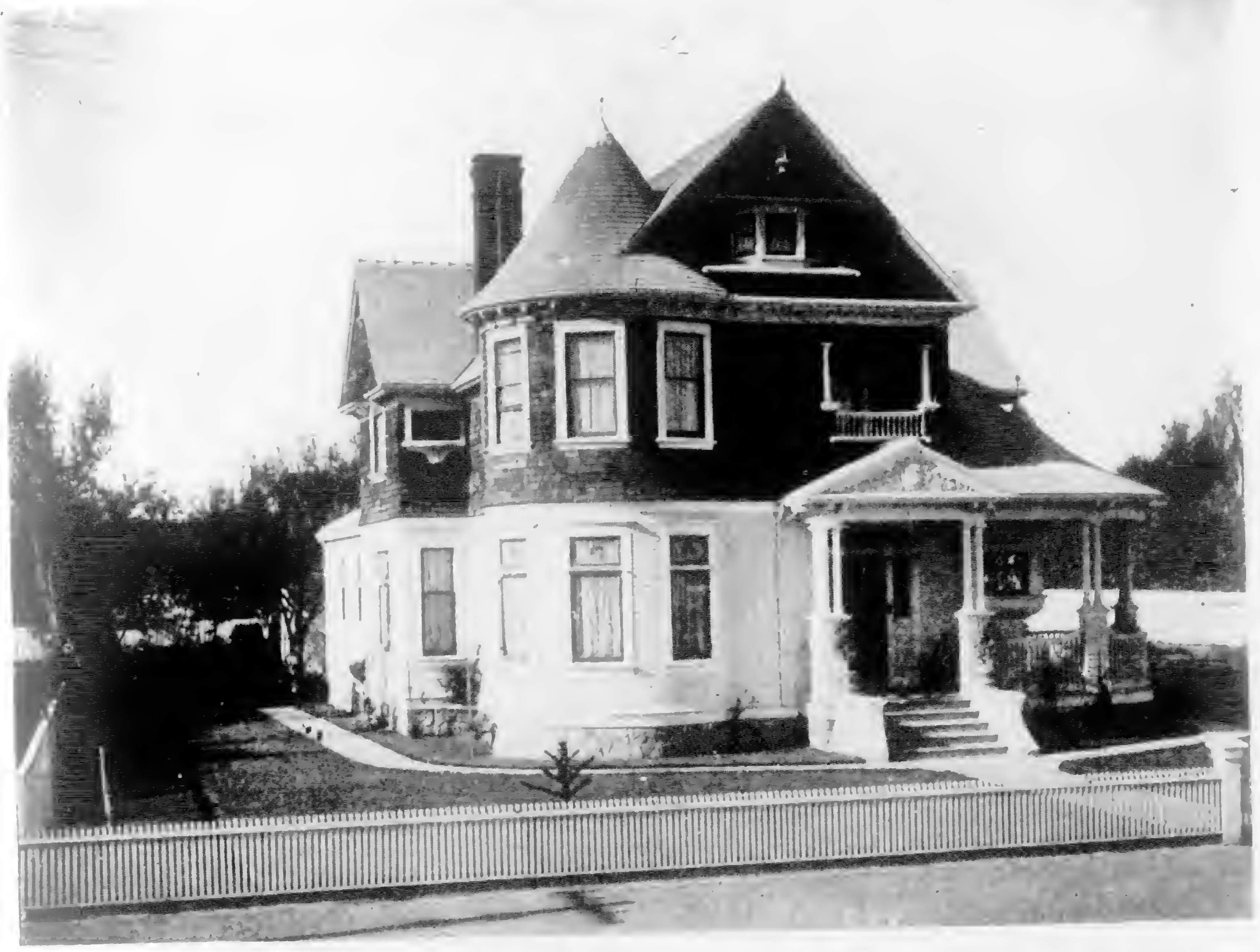


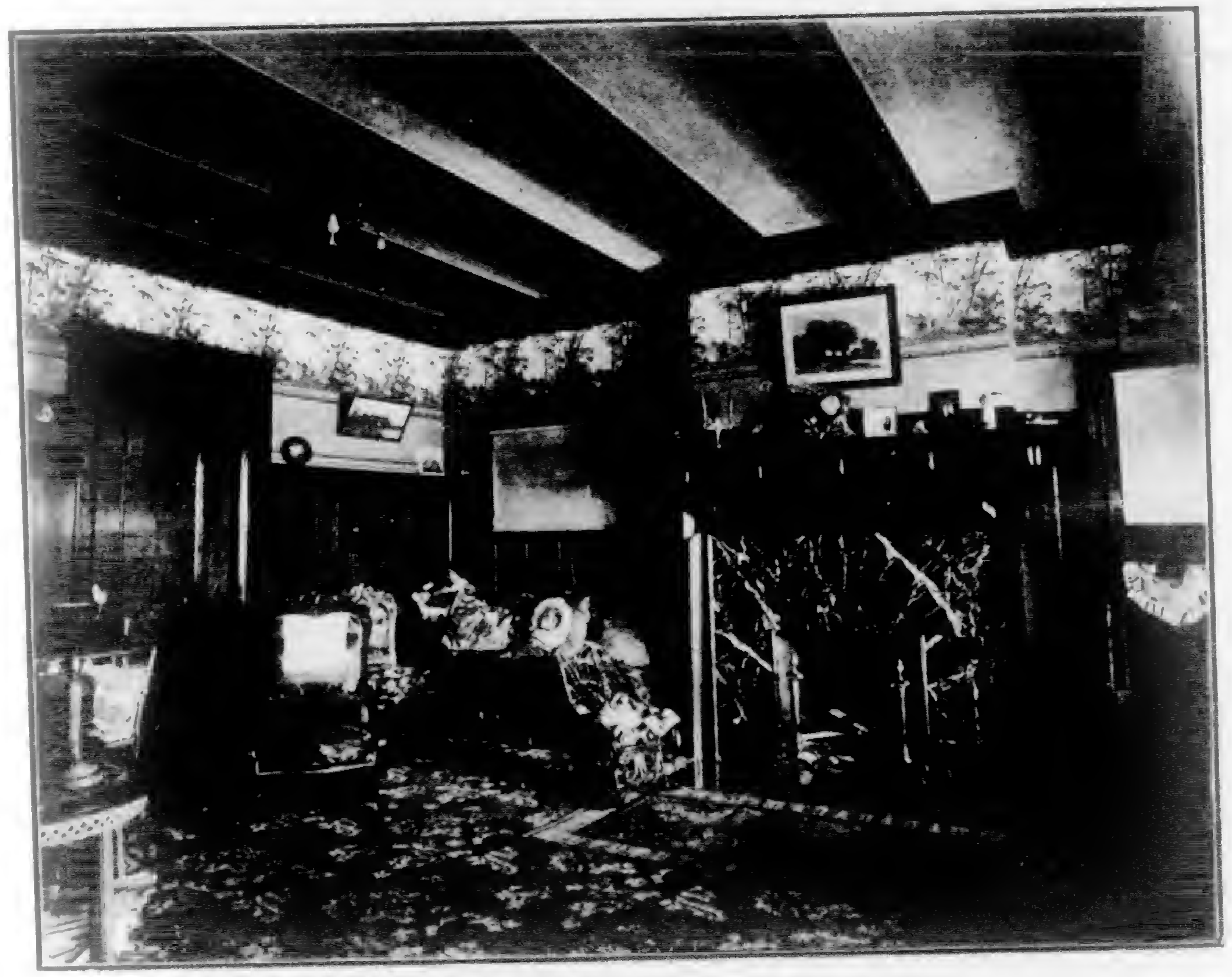
Residence of M. B. Tuttle, Watsonville, Cal.
W. H. Weeks, Architect



Entrance of Tuttle Residence, Watsonville Cal.



Residence of Geo. Gertz, Watsonville, Cal.



Interior House of Mrs. E. Cornell, Watsonville, Cal.
W. H. Weeks, Architect

Every year opinion is demanding more and more that a home shall be more than a mere house in which to live and that it must be in keeping with modern ideas and tastes and a distinct gain architecturally to the community. This is as it should be; for the ambition to own an attractive home carries with it a greater love for all the institutions that make better homes and elevate character.

This growing taste for the beautiful in buildings makes a constantly increasing demand for good architectural designs. The day when the carpenter was both architect and builder is past; for it has been demonstrated that an owner can employ a competent architect, get a better house in every way for far less money, including the architectural fee, than he could get in the old way; sensible men are becoming aware of this fact and in consequence they will not build without the services of a competent and trustworthy architect. This is proper and right, for the architect has devoted his time and money to the study of the artistic, the harmonious and the convenient in buildings that he may give to his buildings that magic touch that makes of the cottage or palace a thing of beauty. All this requires special study as well as artistic taste which the builder seldom possesses.

Look around you and notice the many houses that are spoiled (and they are many) simply for the lack of a skilful hand in the planning; by a slight change that would not have advanced the cost of the work, the house could have been made so much more convenient and artistic. What a pleasure it is and what a pleasant impression we get as we enter a well-planned building, with its cozy nooks, its open fires, its broad and easy stairways and its well-lighted and sunny rooms, everything in harmony and all designed with an eye for comfort and beauty. We might mention more minutely the many architectural aberrations that greet us at every turn, but we do not care to harp on the mistakes of others: but would rather point out the proper way to the prospective home-builder that he may profit thereby and avoid the costly experience of his neighbor.

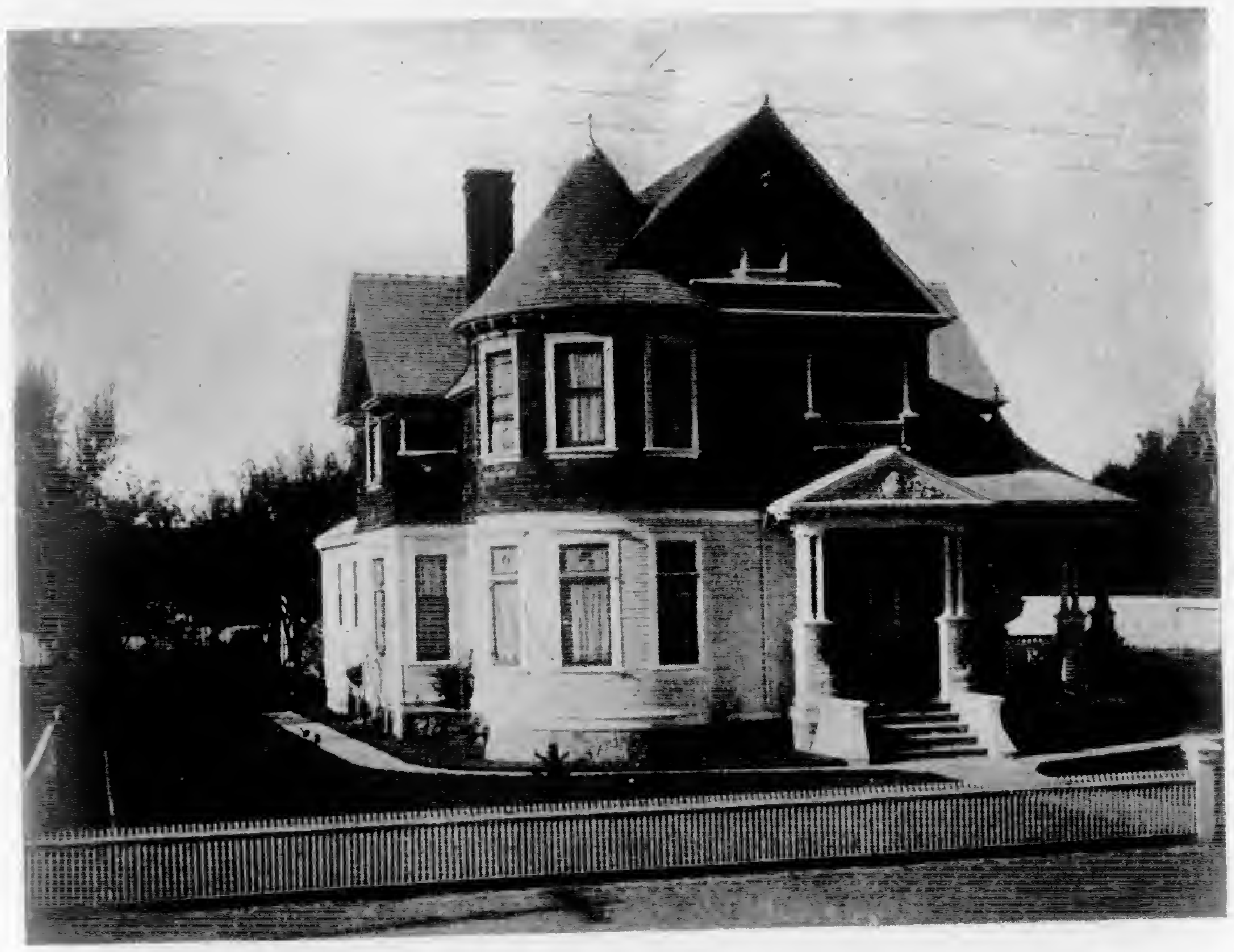
Then in conclusion: The proper way to build, after your lot has been secured, is to engage the services of an architect in whose ability and honesty you have perfect confidence; beware of the builder who tells you that you can dispense with the services of an architect and that having plans drawn is an unnecessary expense. He knows this to be false, and he is simply misleading you in order to get a larger profit on your work. You can just as soon dispense with a lawyer in a lawsuit or a physician in a case of serious illness as to dispense with the advice and aid which a competent architect can give in the building of your home. With his knowledge of materials and mechanics he can save you far more than his charges in actual cash, without considering the superior building that you will receive.

* * *

Let it in

When you're feelin' grouchy,
  Let the sunshine in;
When your face gets feelin' hard,
  Crack it with a grin.

Don't be 'fraid o' wrinkles,
  Tear loose with your mirth;
An old face, laughter wrinkled,
  Is the sweetest thing on earth.



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The Confessions of an Architectural Reformer

By F. W. FITZPATRICK, Architect

MY NATIVE modesty prompts me once in a while to ask myself the question, Do I not harp overmuch on the subject of good building, proper construction, and do not the readers of The Architect and Engineer, Fireproof Magazine and other journals grow a bit tired of such continued preachments by a probably rather tiresome preacher? Then I come back at myself with the question. Is it possible to say too much on such a question, even if you don't say it well? It puts a fellow between the two horns of a dilemma, as it were, because, spite of the aforesaid modesty, I daily see evidences of the good that even this John-the-Baptist-like-preaching-in-a-sort-of-desert has done, and on the other hand kind friends or at least critics often suggest, and not by indirection, that I say too much, approaching if not indeed passing within the limits of garrulity. A letter received this morning from the editor of an important technical journal has brought all these conflicting thoughts to mind again. He is polite enough to not say that I talk too much, but intimates that I lay too much stress upon safe construction, that in dealing with this fire matter I should remember that cities should be encouraged to increase water supplies, to improve fire departments and get people into the use of sprinklers, etc., etc.; that much harm can be done by exaggerating the power of a single factor; that I ought to use my channels of publicity to meet the fire problem on a broader basis, and should labor rather for the co-operation or co-ordination of the various curative agencies rather than to lay such emphasis on merely the one point of proper building. He excuses me, however, on the ground that being a specialist on construction I naturally imagine, as do all specialists, that my particular branch is the all-important thing!

The gentleman, as I say, edits an important technical journal that is doing considerable good in the field of fire-extinguishing, but I hardly think that his argument is of excessive weight. Cities and countries have labored along the lines he suggests from time immemorial, fighting plagues, diseases, fire and all those things with curative agencies after the trouble has set in. Under the new dispensation they have become more intelligent, and are trying to prevent the spread of those ills; indeed their very occurrence, even in most incipient form. And I respectfully submit to his attention and to that of all other critics that "an ounce of prevention is worth many pounds of cure," and that there is no better known or more simple prevention of fire than the elimination of fuel to burn.

Does it take a vast deal of imagination for editors and all others to realize that the more buildings you have of good construction, incombustible and undamageable by fire, the less need will there be of water, firemen, and the other so-called "co-ordinate" branches for the fighting of fires when it does occur, branches that, granted, have become most necessary by our follies in the past, but that sensible men should strive to eliminate rather than to everlastingly keep on increasing?

No; for the nonce at least I will not change my ways, but rather will clamor still more loudly from the house-tops, if need be, and emphasize with every means in my power the overwhelming importance of proper and fire-resisting construction, even though some people may relegate me to the ranks of mere specialism.

Without pleading guilty to the fault myself it is, nevertheless, rather amusing to see how prone people are to exaggerate the importance of their own branch. A rather ludicrous example of this was given a short time ago in a paper describing the Chinese army, written for one of the magazines by a young officer who is attached to the quartermaster's or whatever department it is, having much to do with the clothing of our army. He interestingly describes the Chinese troops, and then sums up the whole subject in three or four salient criticisms that constitute the reasons he has for believing that the Chinese army is not fit to meet that of any of our so-called civilized nations. These weighty reasons are followed by as many suggested cures and one of these, in fact, I believe the second one in importance, is an impassioned appeal to the Chinese authorities to take up the slack in the seat of the Chinese breeches!

* * *

We read a good deal in the architectural journals about the various points in the ethics of the profession. Competitions and their management, decision, etc., offer a cardinal topic for these discussions. I just ran up against a little detail of "ethics" that, of course, in the main, concerns me alone, or certainly not more than the three or four of us in general consultation practice, though it may be of interest to the profession at large as an illustration of how at least some competitions are handled. A while ago a semi-public building was decided upon for a certain city, and a competition announced. There were all the usual frills about it of the most sacredly straight affairs, the plans were limited, no color, no perspective, the names concealed and every precaution taken, seemingly, to make it an ideal competition. One of the local architects came up to see me—a very nice fellow, standing well in the community—and we made arrangements to go into it together. He not merely retained me to advise him or design the building, but we went into a full-fledged special partnership. The relations are, therefore, naturally closer than those of merely client and advisor, or to put it legally, I am not only his attorney, but a party in interest. Well, sometime after, another architect from a city some distance away from the first came to see me, and wanted a design of a building made, so many stories high, as fine a water-color as was possible to make, and so on, and so on. He grew enthusiastic and confidential, and told me that it was for a competition that was all tied up with the strictest kind of frills, concealed names, etc., no pictures or anything of that nature, but he was "on the inside," and had an appointment for a secret meeting with the committee the day before the competition came off and was to show them this picture, other drawings that the other architects could not possibly have, and all that sort of thing. It was all fixed for him, and the only thing that remained for him to do was to convince two of the committee by the superiority and number of his drawings that he was the right man and that the rest of the committee were justified in wanting to award him the job. I excused myself from joining in anything of that kind, telling him that it was shady practice that I didn't care to countenance, and strongly advised him to keep out of, too. But he pressed the point and proceeded to give me proofs that he had the inside track, and wanted to produce this picture because the committee had asked him to, and finally wound up by telling me that it was this very building in the other city that I was then at work upon! Now, then, the ethical question is, "Where am I at?" Keeping the attorney simile in mind, here is where I am counsel and partner to a defendant, let us say. Crooked, though in good faith, the plaintiff unconsciously comes to me with his case, and before I know that it is the same case he gives me valuable information, proofs of where and how he proposes to defraud my client and partner. As a lawyer I can not only not take the case, but ethically can not use the information so imparted to me in the sacredness of the confessional, as it were. That would be at law, but I would give fifteen cents to know what architects generally would advise. To get right down to brass tacks, however, while I would not denounce the man, I think it is up to me as a reasonable business man with his own and his associates' interests at heart to take such steps, without any publicity or fuss, to estop the aforesaid committee from doing anything illegitimate and under-handed with this particular or any other crooked practitioner.

And that is just one little illustration of the meanderings and twists and turns of the competitions matter, the process adopted in awarding millions of dollars' worth of work and that involves thousands of architects into thousands of dollars and months of time uselessly expended.

* * *

Some "alarmist" has seemingly stirred up our French cousins a bit on this question of reinforced concrete. It did appear awhile ago as if the French, with their art nouveau and other crazes had abosolutely and completely absorbed the reinforced concrete one. The discussions being carried on in their technical journals are very interesting, indeed. A Mr. Boileal seems to be the highest authority in favor of concrete there, but he certainly bases his contentions on exceedingly slim foundations. One would think that with as much concrete work as they have done there, these French concrete experts would rely upon their own tests and findings, and not having to go galumphing off to foreign countries for the reinforcement of their theories. They must realize that when reports and proofs come from such long distances they are liable to lose a little strength, a certain tare, on the way. To us here, who know and who have seen Baltimore and San Francisco, such statements as these appear indeed infantile, silly. One of the most serious pronouncements of the highest French authorities upon concrete is—and I give it to you verbatim:

> "At San Francisco, as it was at Baltimore, the conflagration has put in evidence once again the absolute incombustibility of reinforced concrete."

Who ever said it did burn? But see what fire does to it. To continue:

> "There were stone and granite went to pieces under the influence of first heating, then chilling; there were exposed iron floors that were directly in the path of the flames, became red hot and twisted cork-screw shape, distorting the lateral walls and collapsing in twisted masses; there did reinforced concrete stay intact."

But it didn't, and since the French have just gotten around to San Francisco, why it is going to be a pleasure for me to aid in their enlightenment by giving them a lot of photographs showing places where their reinforced concrete did not stand even as well as plain cast-iron unprotected.

Another high authority as ably states and apparently without a tremor, that:

> "In Baltimore, without exception, all the tall buildings, the eighteen and twenty-storied ones that successfully resisted the fire, were of reinforced concrete."

That certainly was a jump for the one poor little three-storied affair about which our American concreters spouted so proudly. And still another authority who holds forth in the Bulletin of the Industrial Society of the North of France:

> "At Baltimore, on the occasion of its famous conflagration that destroyed the greater part of the city, we could compare, but alas! at what a price, the resistance to fire offered by the different materials in construction; steel or iron used without protection became so distorted as to cause the collapse of the building in which it was used, wood burned (startling discovery), marble exploded and so did granite and stone. Alone the buildings constructed of reinforced concrete resisted. Their columns and floors were not destroyed."

I have always had good reason to esteem the French most highly, but I seriously maintain that of all the rich fabricators of the different reinforced concrete brands I have yet run up against, I have never found anything quite so rich as is the lot of stuff just now running through the (more or less concrete) French technical journals.

* * *

Concrete Has Made Good

CONCRETE has "made good" as a building material. If it is too much to say that it is the material of the future, accenting "the", it is not too much to say that its use will grow more rapidly than that of stone or brick in the next few years.

Just one thing has been shown by mishaps, some of them grave ones, which have befallen a few concrete structures. This is, that there is a "know how" to concrete construction just as there is to brick laying or stone masonry, and that the consequences of not knowing how are disastrous.

One accident has occurred which is strong argument in favor of concrete. In Tunis a six-story warehouse of concrete was built on a foundation insecure on one side. The building listed until the top was ten feet out of the perpendicular. But not a crack appeared in floors or walls, and when the foundation is strengthened the whole superstructure can be jacked up and restored without damage.

Nothing the matter with concrete in this case, but much the matter with the selection of a foundation. In other cases amateurish mixing has resulted disastrously. This sort of work is certain to disappear through the demands of builders, who realize the good qualities and the economies of concrete too thoroughly to allow the work of a few bunglers to discourage their use of it.—St. Louis Realty Record.

* * *

If the congregation of that Tennessee minister puts implicit faith in what he says, it must be a happy lot now-a-days, for he says that hell is a place of strong drink, tobacco, baseball, theaters and peek-a-boo shirt waists. What other inducements for a permanent home could a poor sinner ask?

New Styles in Wall Paper

WALL paper dealers tell me that the old-time border is almost a thing of the past, writes Robert Morris in Building Management. Naturally this is not to the liking of the manufacturers or the dealers. The prevailing custom of dropping the ceiling down to the picture moulding means a good many dollars to wall paper men. For if you were to use a border at all, you would probably use a 50-cent border with a 13-cent ceiling. So the manufacturer and dealer are losing the difference on two or three rolls for each room.

The manufacturers are giving special attention to designing attractive borders, with a view to reviving their use, but with little success, especially so, as the price of wall paper is sure to go up next year. This year's stock is selling at about the same rates for the various grades as have prevailed for several years past; but it was mostly made up before the rise of price of paper, colors, and several of the things which enter into the production of wall paper.

The lines, as a rule, show a great advance in artistic merit and excellence of color over those shown in previous seasons, the manufacturers seeming to find that it pays to cater to a more refined and educated taste. There are on the market many papers that appeal to the public simply because they are odd, even though oddity often means ugliness. In color there seems to be no prevailing tendency. The browns and tans, so much seen last year, are less in evidence except in duplex and ingrain papers, where the shades are still prevalent.

In the more expensive papers the fabric effects are largely in evidence. These include tapestry effects, tekkes, Japanese leathers and grass cloths, velvets, and English fibres in both printed and plain.

The less costly papers run largely to double tones. Some of these also have an additional printing, which relieves them of a too severe ingrain appearance. Papers for bedrooms are unusually attractive by reason of their being so highly colored, as last year. The lilac, the wistaria, and other softly tinted flowers are in vogue..

Upper third decorations are, of course, always in style for the dining-room; their use is extending to other apartments also.

Many beautiful effects in gray are shown. One or two factories are showing a great many papers with a happy combination of gray and green. Very few strong red papers are noticed in any of the lines, and only occasional patterns in the once popular delft colorings. Greens are still prevalent, and the reason is probably because their coloring usually looks well with most furnishings, especially with the popular mission styles. The chintz and fabric colors are in evidence in bedroom papers, as well as natural colorings of flowers and foliage on white or colored grounds. Dresden colorings are also seen quite a good deal. Metals are used to some extent, but, as a rule, quite differently from the fashioned gold parlor papers, and show evidence of much greater refinement of taste.

* * *

We may yet have to remain married to our own wives if these legislatures do not take to attending more closely to their own business. Just see what South Dakota has done. Gone and shut down the divorce mill right at the time the Easter bonnet bills are due.

Cement and Concrete

Concrete Construction for Bridges

CONCRETE has come as a substitute to many of the building lines. In bridge construction it has apparently filled a long-felt need. Up to a very recent period, a time well within the memory of many persons now living, says an exchange, there was but one alternative, that of the stone arch, and this form of construction was not only very costly, but also failed to lend itself to many locations. The cost of stone masonry has been, and is yet, in many instances, prohibitive, and a makeshift has in the majority of cases taken its place. But even with its use there has ever been the desire to make it as permanent as possible, and to this end the present age of iron began to make itself felt in bridge construction. About sixty years ago iron was first used by the introduction of wrought bars into wooden trusses, these bars being in tension, while the wood was, generally, in compression, although it was merely common sense which placed them so. At that period engineers were just begining to study trusses and the strength and loading of the various members, and even as late as 1875 the most of the companies which were then building iron bridges did so by guesswork and main strength. In the evolution of the iron industry the bridges built of part wood and part iron gave way to those in which the tension members were made of wrought iron and the compression of cast iron. Owing to the brittleness of the latter metal, it was soon discarded, and bridges were generally built of wrought iron throughout. The discovery of the Bessemer and open-hearth processes for the manufacture of steel produced a metal with so much more strength than wrought iron that engineers generally adopted it, believing that the question of permanent bridge construction had been solved.

There were a few engineers, however, who shook their heads and said that this, too, was a makeshift like the rest. Of a little longer life, perhaps, and good while it was new, but—how long would it last? The steel enthusiast replied that it was good for just so long as it was kept properly painted to prevent corrosion and consequent loss of material. It was found that this was not the true answer. Steel may last in its entirety so long as it is kept perfectly protected from corrosion; but when it is subjected to a great number of vibrations, even though they be well within its calculated strength, it becomes "fatigued." Under continual vibration the molecular form of the metal becomes altered in a manner resembling crystallization, and it has often been noticed that a rod which has been so changed in character is more brittle than cast iron. So the engineers who shook their heads have been to a degree justified by the results, and steelwork can not be considered as permanent unless it is protected from erosion and is free from vibration.

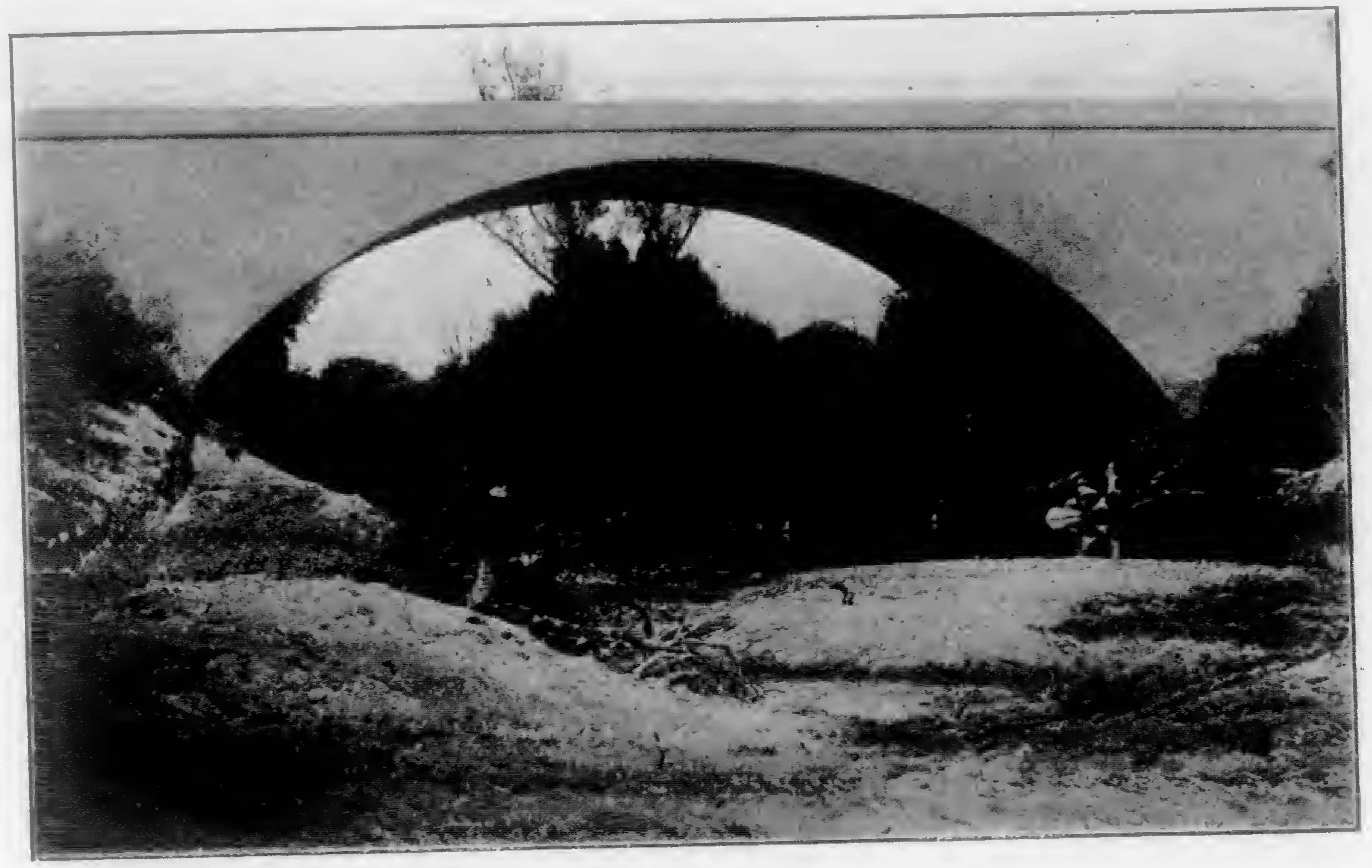
The protesting engineers did not content themselves with shaking their heads; they began to look for some material or combination of materials which might meet the necessary requirements. It must be plastic, strong, economical and permanent, and, in reinforced or armored concrete, they claim a good result. The design and construction of bridges built of this material has, as a matter of course, been governed by the same laws of evolution that controlled the progress of the iron bridge. Francois Monier was among the first to avail himself of it, and, in 1867 took out his first letters patent on the use of steel for tensile strength in his concrete. Perhaps the greatest impulse to the industry was given by the work of Francois Hennebique, another French engineer, who, between 1892 and 1902, furnished the designs for about 10,000 structures costing nearly $100,000,000. In this industry the American engineers have trailed far behind their European brothers. Only in the past ten years has any real progress been made in this country, but we are now equaling and will soon surpass the work on the other side of the water, both in design and in quantity.

One fine example of this form of construction is that of the bridge at Chattellerault, France, built in 1898. It is 26 feet wide by 450 feet long. The center span is 164 feet and the two end spans each 135 feet in the clear. All arches have a rise of one-tenth the length and the arch ring is but 20 inches thick. This bridge was built in three months and cost but about $40,000. Upon completion it was rigidly tested by government engineers and gave entire satisfaction. The most remarkable feature shown by these tests was that a load concentrated upon one arch caused a slight rise in the adjacent arches, an evident proof that reinforced structures are truly monolithic.

An excellent example of American work of this sort was erected in 1905, in a bridge over the Wabash river. It is 695 feet long, and the cost was slightly less a foot of length, although the prices of materials and labor are greater than in France. One reason for this saving is, however, due to the peculiar construction. In this bridge, the abutments are each connected to the first pier by means of steel rods imbedded in concrete under the bed of the stream. These rods take care of the thrust of the arch, which must otherwise be provided for by heavy masses of masonry.

In strong comparison with the endurance qualities of other building material are those of reinforced concrete. It is in no sense subject to decay, and when it is used in sea water for the foundation of a pier or wharf it is unaffected by the teredo, which so quickly destroys timber. It is not affected by rust nor by the carbonic acid in the atmosphere. When properly conctructed it requires no maintenance charge for painting or for any other kind of protective treatment. The various tests which have been made by the building bureaus of great cities, as well as by the involuntary test of great conflagrations, have shown that its power for resisting fire—and even a combination of fire and water—is greater than that of any other known type of building construction. The purposes to which reinforced concrete are now put are almost innumerable. At Playa Del Rey, near Los Angeles, is a notable bridge of this material. The extreme length of this structure is 205 feet 8 inches. Its span is 146 feet, which is 15 feet longer than any other cement bridge span in the world. The width is 19 feet, the spring 18 feet and the height above water 20 feet.

Engineering News, in its issue of April 18th, declares that the first



Dry Creek Bridge, Stanislaus County, Cal. Span 112" Ry. 26"
Pacific Construction Co., Contractors *Jno. B. Leonard, Engineer*

Another View of the same Bridge.

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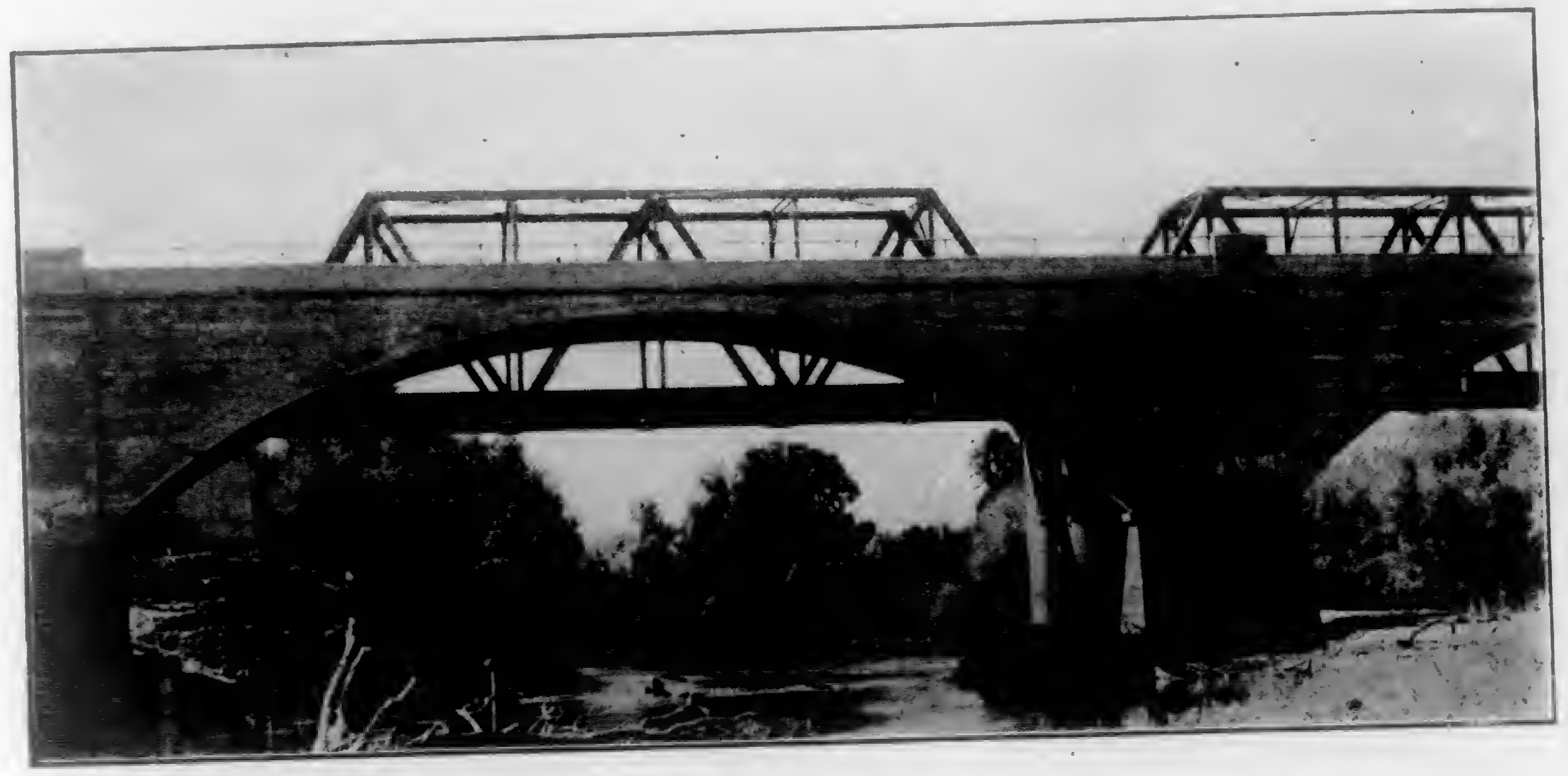
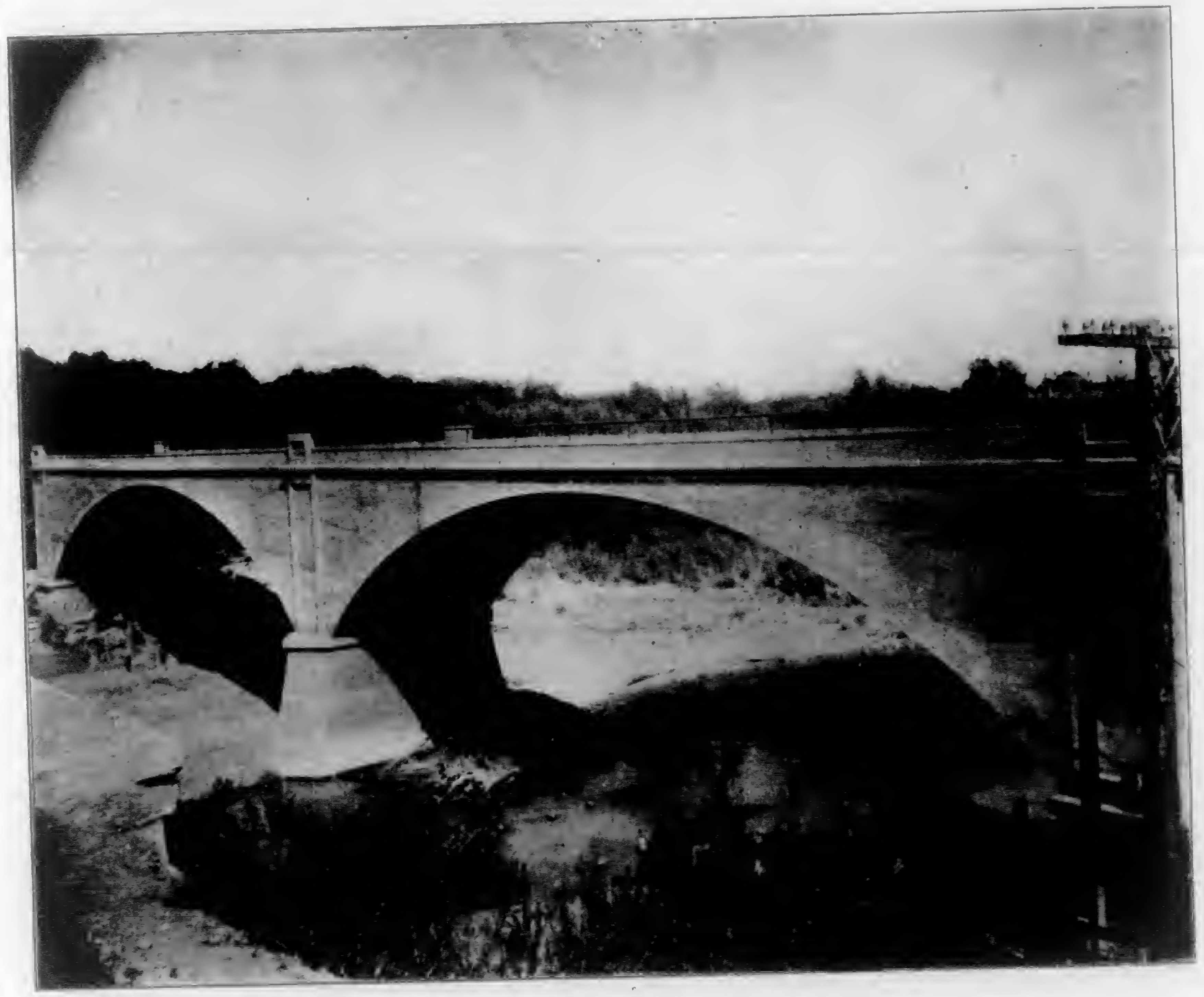


Ripon Bridge between Stanislaus and San Joaquin Counties. Two 100' Spans
Pacific Construction Co., Contractors. *Jno. B. Leonard, Engineer.*



Another View of the same Bridge.

concrete arch bridge, either plain or reinforced, to be built in the United States, was the Pine Road bridge over Pennypack creek in Philadelphia, Pa., built in 1893 of plain concrete. This is the bridge referred to by Geo. S. Webster, M. Am. Soc. C. E., in his paper read before the Association of American Portland cement manufacturers. The Pine Road bridge, however, is not the first concrete bridge to have been built in the United States. In 1889 Mr. E. L. Ransome designed and built a reinforced concrete arch bridge in Golden Gate park in San Francisco. An illustration of this structure is given in Reid's Concrete and Reinforced Concrete Construction, and its historical prominence has been somewhat widely exploited in other ways.

The illustrations accompanying this article are of bridges designed by Jno. B. Leonard, C. E., and constructed by the Pacific Construction Company of San Francisco. Both structures are of reinforced concrete. One crosses Dry creek in Stanislaus county, California, and the other is known as the Ripon bridge, which joins Stanislaus and San Joaquin counties. The bridges are of concrete reinforced with corrugated bars.

* * *

The Artistic Impression of Reinforced Concrete

A NUMBER of Pacific Coast architects, who have had experience with reinforced concrete construction, have contributed their opinions in a special number of the American Architect. The entire issue is devoted to a discussion of the architectural treatment of reinforced concrete buildings. Under the caption: "On the Artistic Expression of Reinforced Concrete" two California architects contribute the following:

By W. Garden Mitchell, San Francisco—I think it is Ruskin who says that "a building only begins to be architectural when something is added which is not absolutely indispensable." In this I agree. The architectural reaches beyond the utilitarian, and if in reinforced concrete we are to confine ourselves to anatomical lines, posts, girders and floor-slabs worked out by formula, I do not see that we are to get anything much more interesting than the steel frame of the skeleton-construction type. Structurally, in my estimation, reinforced concrete admits of greater possibilities than any of the materials hitherto used in the art of building, for on account of its cohesive strength, its capacity to withstand compression and its monolithic character, it can be used as a vertical post, horizontal beam or slab, and, furthermore, projected as a cantilever in a manner which perhaps is only possible with wooden construction. But Portland-cement concrete has an ugly color and must be covered with some surface other than its own.

The beauty of stone lies not only in the color it possesses and which all artificial substitutes fail to equal, but also in the endless variety of color from stone to stone, giving the whole a charm compared to which all artificial compositions imitating stone are lifeless. This brings us to the conclusion that an imitation of stone in concrete is not a rational solution.

First, then, I look to the plasterer's and modeler's art to embellish a reinforced-concrete building. The post, the arch, the lintel, the projecting balcony, the overhanging cornice, the groined ceiling and above all the dome, are eminently suited to the material; but for the artistic finish of these we must look first to the plasterer and modeler. Where the building has not to be all windows I look for beauty to great, smooth surfaces of tinted plaster with, at the window and door openings, embellishments in rich examples of the modeler's art applied to the surface after the structural part has been completed. The whole tinted in some of the many tones that they apply so successfully in Mexico to their stucco buildings, ranging from pale blue and delicate green to the pinks of the sea shell and the stronger tones of orange and the like, or the whole brilliant in the white of the pearl or the restful white of ivory, or partly colored or decorated with bands and stencils. Where money is more plentiful, the flat surfaces may be covered with colored tiles.

In my experience I recall only one successfully treated building of this character; it is in the City of Mexico; the tiles are blue, orange and white, or mosaic (marble or glass) or slabs of marble may be successfully used.

The idea to be shaken off is that the architect is to be tied down to the least concrete that will do the work in safety. If owners will agree to pay only for that, they cannot hope to get anything at all presentable, not to say beautiful, in reinforced concrete.

By Morgan & Walls, Los Angeles—Reinforced concrete is a structural material the same as steel, and we see no reason why it cannot be masked and treated, the same as we would a steel building, with terra-cotta, brick, stone, or any other material that the architect may choose to use. We have used terra-cotta on the exterior of our buildings where reinforced concrete is used structurally in precisely the same manner as when steel has been used, and pressed brick or stone can be used in the same manner, being supported on ledges and thoroughly anchored, the same as we would handle a steel structure.

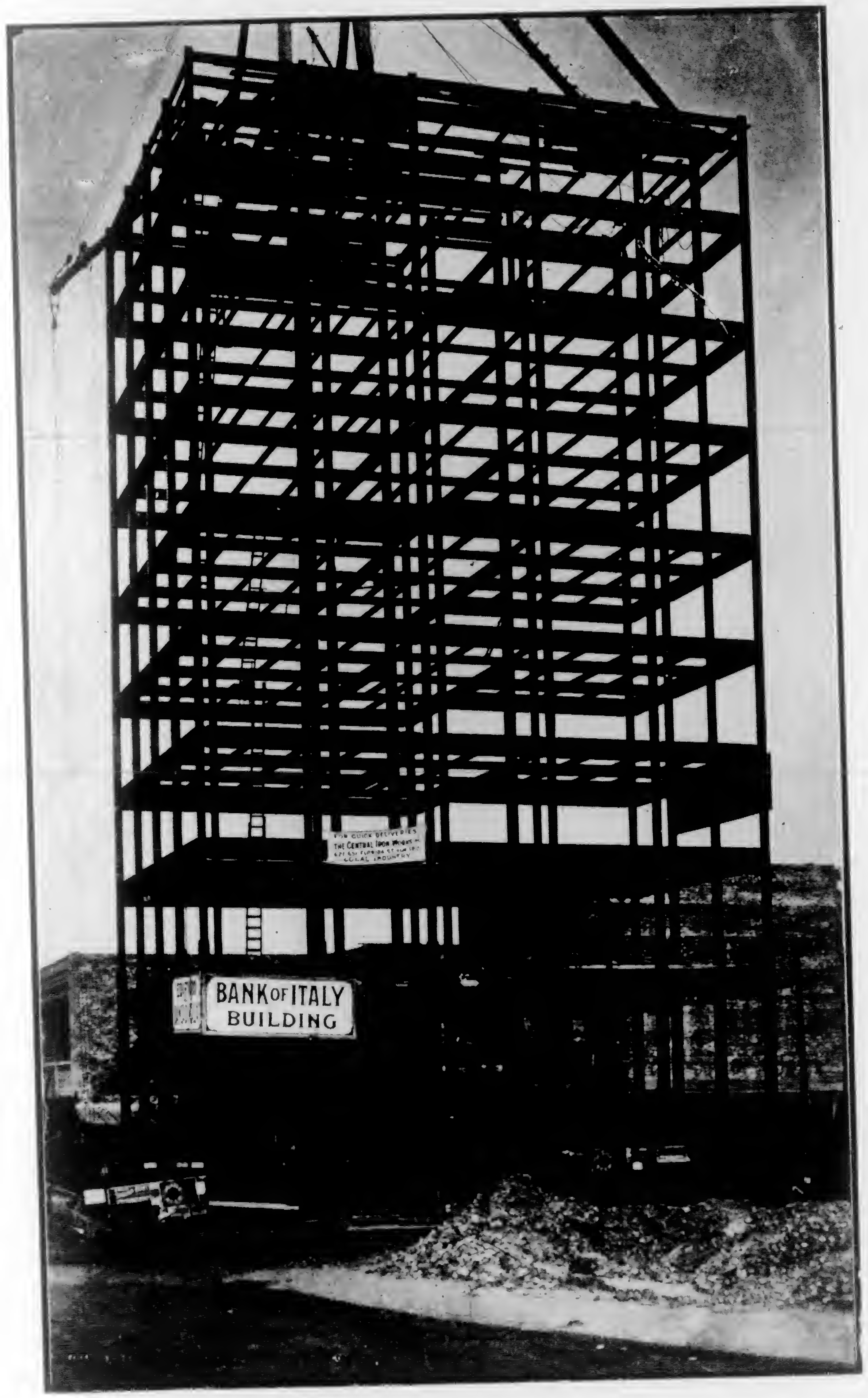
Of course, if one wishes to study economy and honest expression of construction he can finish the concrete direct, carrying out any order, or any other architectural decorative features that he may wish to incorporate in the building. The architect has just as much scope in the treatment of a reinforced-concrete building as he has in a structural steel building. Cost is the only thing that curtails him in any treatment that he may desire to make of the building. It is less expensive and perhaps fully as effective treated wholly as cement, all moulds and other enrichments being cast or run in cement.

Mr. Mitchell Adds to His Views.

Since expressing my views as quoted above, I have read and studied the suggestions of the thirty architects who responded to the request of the American Architect to give their opinion on this subject of "The Artistic Treatment of Reinforced Concrete." I conclude that there is a concensus of opinion thus far, that stone should not be imitated or, indeed, anything; that the color of Portland cement is bad and must be covered up. Some suggest covering with a thick veneer of brick stone, terra cotta, and so forth, much in the same way as with the case of a steel frame. Others fall in line with my own ideas, which are to cover the surface with stucco, tile and mosaic or marble and depend for effects more on a polychromatic treatment of broad, flat surfaces rather than in the embellishments produced by columns, pilasters and projections of bands and cornices, all of which while quite possible are not the most direct expression of concrete construction. Another idea that comes to one in the study of these various opinions, is that as Solomon found it, "There is nothing new under the sun," that is in the fundamental necessities of building, for are not windows for light and doors for entrance, columns for support and floors to walk on just as it was before the dawn of history, and whether we build in stone or concrete or wood these fundamental necessities in size and shape remain the same in all ages, and I think the solution of the problem of how to build artistically in concrete is more to be found in the wise selection of models and styles that have already been proved suitable in times gone by to the artistic rendering of similar material and not in an endeavor to create a new style when no new style is demanded by the material. Simple and pleasing shapes and a decorated surface either in color or low relief would appear to be the fundamental necessities. In monumental buildings I can imagine the Church of San Sophie at Constantinople a monolithic or even for Bentley's new cathedral at Westminster, London, depending for beauty more on the shape of their masses and decorated surfaces than upon a thousand details of columns and cornices. In the Far East such styles of architecture have proved successful in times past, and with similar cloudless skies and strong sunlight here in California we should not fear to imitate those smooth and colored surfaces, only in low relief which were the glory of the Moor and that country from which as a colonist he went forth to show to the people of the West that not only in structural lines but also in decorated surfaces beauty is to be found.

W. GARDEN MITCHELL.

Residence of Mr. A. N. Judd. Watsonville
W. H. Weeks, Architect



Steel Frame, Bank of Italy San Francisco.
Erected by C. A. Blume *Frank T. Shea Architect*

Modern Steel Buildings*

By MR. JOHN M. EWEN, M. Am. Soc. C. E.

I SHALL speak to you this afternoon about modern steel buildings, and also about the modern methods of business organization which are necessary to the rapid and efficient construction of such buildings.

The first big building in which the idea of a steel frame was used to any extent was the Home Insurance Building in Chicago. This building was erected in 1883. Only twenty-four years have passed since that time. You can see, therefore, that the whole revolution in modern building construction has been condensed into a space of less than a quarter of a century.

The principle first embodied in that building has completely changed the character of big building construction. But there has been a change, not only in the buildings themselves, but in the methods of organizing the architects, the engineers, the contractors, and the artisans who construct the buildings. Fifteen years ago the erection of an eight or ten-story building was considered a good year's work. Today a building twenty-five or thirty stories high can be erected within that same length of time. This change is due to improvements in methods of work. The modern construction engineer, engaged in the erection of big buildings, has a business organization which differs from the business organization of twenty-five years ago almost as much as the steel building itself differs from its solid-masonry predecessors.

As an example of the rapidity with which a modern engineering force can work, we may take the Sears-Roebuck plant on the West Side of Chicago. This plant consists of four large buildings. The largest in the group is ten stories high, four hundred feet wide and sixteen hundred feet long. The total cost of the plant, including all buildings, was more than four million dollars. Yet the whole job was done in eight months. In other words, building construction has not only changed, but accelerated. It is not only different in materials, but different in methods. It has not only more steel, but more speed.

And, by the way, the speed is just as important as the steel. When an old building is torn down in the heart of a great city, the owner loses his rents from the time when the old tenants are turned out to the time when the elevators begin to carry the new tenants to their new offices. Can the engineer constructor have that new building ready in ten months, or will it take him eleven? The difference of one month is important. There are office buildings which have a monthly rental roll of fifty thousand dollars. That sum represents to the owner the difference between an engineer constructor who can put up his building in ten months and the engineer constructor who cannot do it under eleven. It is therefore absolutely necessary that the modern engineering force should be able to do its work, not only with the utmost care, but with the utmost rapidity. This means that the best type of engineer constructor, in order to be able to handle big building operations, must have in his own office, or else closely associated with him, all the different kinds of talent which go into the construction of the modern skyscraper. In other words, the modern engineer constructor is not an individual. He is an organization.

You will be able to see what I mean if I just name the different kinds of trained men who ought to be included in an engineering force com-

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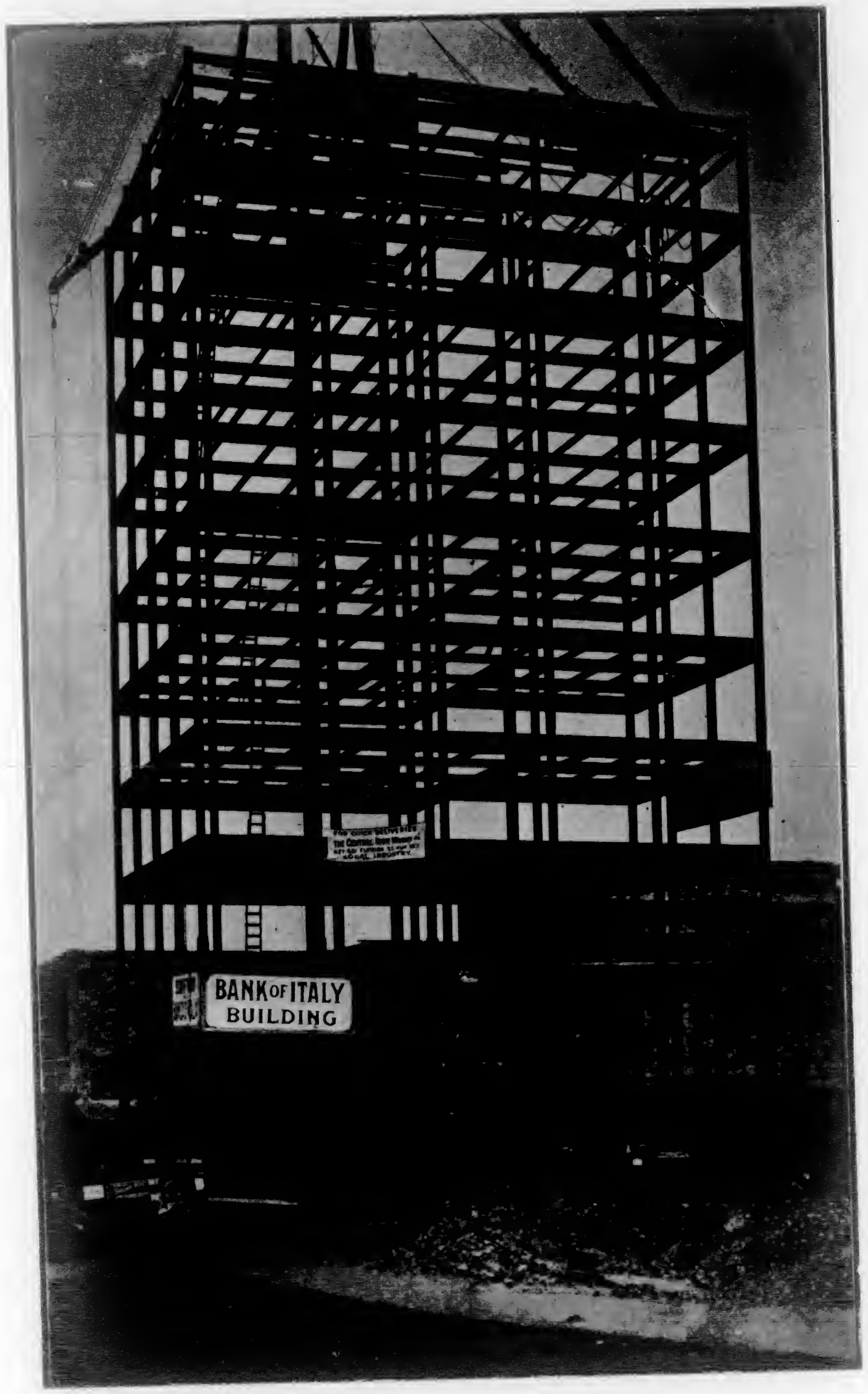
*Paper read before the students of the School of Practical Science, Toronto.



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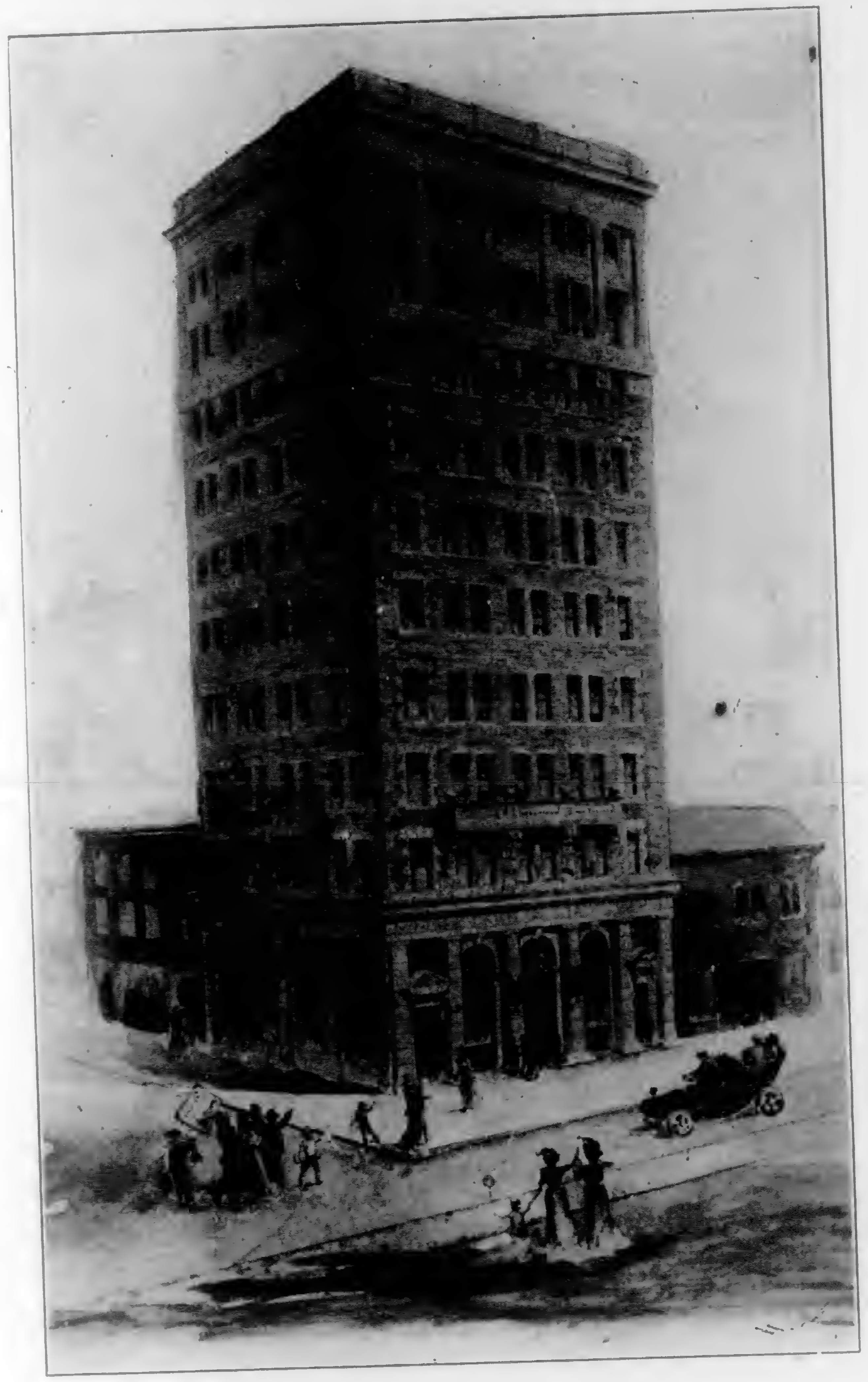

Bank of Italy as it will appear when finished
Frank T. Shea, Architect.

petent to perform a modern building operation with the smallest possible loss of time. An architect; a civil engineer; an electrical engineer; a mechanical engineer; a structural engineer; a sanitary engineer; a fire protection engineer; a purchasing agent; a construction superintendent; an operating engineer; an accountant. For the best work, it is no longer advisable to have all these men in separate offices of their own and to call them in from time to time in an advisory capacity to superintend their particular part of the work. It is better to bring them into what is, in effect, a single organization. They must work like the players in a football game, not as individuals, but as a team. And they must have a captain, whom they all trust and whom they all obey. He is responsible for every play in the whole game. He directs every movement. But he must have men under him who know their own specialties, just as the left tackle in a football team knows how to be a left tackle, or the half-back knows how to be a half-back. The captain can then send that team down the field and have it under complete control, and know what every man is doing every second. The difference between the old style football of fifty years ago, when the players roamed all over the field very much at their own sweet will, and the modern organized football, in which the whole team is under perfect control and moves like one man, is the difference between the scatterd individuals who used to collaborate in the construction of a building fifty years ago and the modern, compact engineering force which brings all those individuals together in one team and which can calculate, almost to a day, the exact time which it will consume in getting a certain piece of work done.

* * *

California Gypsum

Frank L. Hess, of the United States Geological Survey, has recently made a tour of the gypsum fields of California and has returned to Washington laden with specimens. He will prepare a bulletin on California gypsum for publication in the near future.

There are now four gypsum mills in the State, one at Amboy, one at Los Angeles, and two at Palmdale. Of those at Palmdale one is still in process of construction. The product of these mills is consumed in the State. It is used mostly for wall plaster, but a smaller amount is ground for fertilizer. Generally speaking, the gypsum runs from 54 to 90 per cent pure. Deposits occur, however, in the form of alabasters which are very pure and are suitable for the manufacture of plaster of paris, but they are far from railroads, and so at present unavailable.

The deposit at Amboy is found in the middle of the Mojave desert, along the tracks of the Santa Fe railroad. The plant is situated near the bed of an old lake around the edge of which the gypsum has been deposited. Gypsum sets very quickly, usually in about five minutes. Because of this, a retarder often consisting of slaughter-house refuse, dried and powdered, which delays the setting from fifty minutes to two hours, is employed. There is nothing peculiar about the California gypsum, as distinguished from that of other localities, except the fact perhaps that at one of the plants it is necessary to regrind the gypsum after calcining it.

California producers are fortunate in being able to use oil as a fuel in their gypsum mills. Not only is it a cheaper fuel than wood or coal would be in that State, but it is better suited to the exigencies of the work, as the heat of an oil flame can be more easily and quickly graduated than can that of furnaces which burn wood or coal.

Return of the Tile Roof

TILE, when properly formed, baked and laid on any structure rightly designed to carry it, is the most beautiful roof covering yet devised, but when not properly formed, baked and laid, or laid on buildings for which it is not rightly intended, tile may be not only the ugliest, but the least serviceable of coverings.

Four hundred and thirty years ago it was provided by law in England that for the making of tiles "clay should be dug before November, and be stirred and turned before March," and today the very old tile is considered much better than the new. The same care is not taken in turning out the commercial tile in use at the present time. A good, hard-burnt tile lasts indefinitely; a thing of beauty, it comes very near being a joy forever; it is delightful in color, charming in form, and useful in service. A poor tile has little to recommend it. The hard-burned tile is, comparatively speaking, impervious to moisture, while those half-baked, out of poor clay, not only absorb moisture, but in a damp climate grow a luxuriant crop of vegetation, which may be very picturesque on outbuildings where dryness is not a prime essential, but not altogether desirable on a dwelling.

The Mission fathers no doubt followed the ancient custom of kneading or working the clay in pits under the hoofs of animals, then giving it time to ferment properly. The tiles were probably made by spreading the right quantity of clay on a board or flat surface, patting it to a cake of the right thickness and size, then deftly flopping it over a half-round piece of board which was first well sanded so the clay would not adhere. The clay was pressed and shaped to the form by hand, trimmed about the edges, dried in the sun, and fired more or less perfectly in small kilns. The pressure of the hand gave the tile a consistency and a surface which machine-made tiles lacked. The latter are more or less porous.

The quality of the tile differed with the clay of different localities, and with the care and skill of the makers. Some are soft and very irregular, others are comparatively hard and true. Throughout the Southwest a great variety of clay is found, from the sticky adobe, which is little more than a tenacious mud in places, to fine potter's clay. The Mission builders took their clay as they found it and made the best of it. Transportation was too difficult in those days for them to seek and develop the finer deposits.

The thickness, size and irregularities of these old tiles and the marks of the hand which shaped them are fairly well indicated in the illustrations. The dimensions of those shown are: Length, 23 inches; width of broad end, 12 inches; width of narrow end, 8 inches; depth, 4½ at end, diminishing to 3½ at narrow, thickness varied from ⅜ to ¾ of an inch. There are no holes for nails or other fastenings. Neither are the corners clipped to economize in laying. It is a delight to caress these old tiles just as it is a delight to pass one's hand over a piece of fine pottery, for, after all, the fingers appreciate good modeling better than the eyes.

* * *

A man in Altoona, Pa., has discovered a method of preparing wood and coal ashes so they can be burned again, same as if they were coal. Possibly he has been taking lessons from the gentleman who is supposed to be able to find substance in a departed soul which will burn for a considerable time.

Five Problems That Must be Solved

"SAN FRANCISCO," says a shrewd northern observer, "suffered much from the dishonesty of her officials; and she will suffer more from the indifference of her private citizens." The honest desire of every patriotic citizen is to purge San Francisco of municipal graft and corruption, to restore her financial, commercial and industrial credit, and to pave the way for civic peace and industrial prosperity.

No wonder that both head and heart sometimes ache when the patriotic citizen contemplates, and attempts to analyze, the various difficulties, intrigues and dissensions that now involve this community. On the one hand we are told that the gentlemen responsible for the prosecution of the grafters and corruptionists are of the highest and most unselfish mind and purpose, and that their mode of procedure will be justified by the results. On the other, we are assured that the prosecution should not be willing at any time to sacrifice the heart of the public prosecution to the extent of granting immunity to so many of the proven vicious and dangerous elements that have been so mistakenly elevated to political prominence, as it is claimed, by labor votes.

No wonder that the mind becomes confused in contemplating the vast maze of both evidence and misrepresentation, and in endeavoring to discern the cause and effect of all the alleged facts presented.

It would seem to the unprejudiced and impassionate observer that, beneath all the stormy confusion and the daily newspaper tumult lie several fundamental facts which at least stand out in vivid truth.

First of all: San Francisco too long has borne the reproach of disorder, violence, lawlessness and riot upon her streets. Her good name has been impugned from one end of the country to the other. Her credit and confidence have been stung. The responsibility of her citizenship has been questioned. The authority and stability of her government and its protection to life and property has been questioned. No American citizen can view without alarm such conditions as have obtained for several months in the government and administration of this city. The basic principles of a Republican form of government and the very essence of Democracy have been repudiated and insulted by the perpetuation in office of a convicted Mayor and sixteen self-confessed criminal Supervisors—the latter "good dogs" only while under the whip of the District Attorney's office. So monstrous have these conditions grown that we have come to regard this juggling unwarranted and against the constitution —almost without surprise or objection. The greatest evil that today assails this Republic is found in a well defined contempt for the letter and spirit of the law. When the statutes are held so cheaply as to make it necessary for an individual to usurp the functions of the Court, and when the good conduct of the Board of Supervisors is made dependent on a single individual, no matter how fair minded, then both the law of the land and the institutions of government are in danger of being still less respected by the average citizen.

Secondly: it must be apparent to every unprejudiced observer, who carefully studies the situation—even though his sympathies are entirely with the basic principles of Trade Unionism,—that the Labor Unions of San Francisco, in their domination both of industry and of politics, have been tried in the balance and found wanting. Nor is this an aspersion upon Trade Unionism itself. The truth is that the Labor Unions of San Francisco have not yet "found themselves," or their proper place either in the attempted control of industries or politics. Trade Unionism as a dominant factor is still young in San Francisco; it has not yet chosen as leaders men of such integrity, patriotism and intelligence upon whom it can rely implicitly. Its first excursion into civic politics has proved a failure lamentable for the city and disgraceful for labor;

its extravagant demands and unfair dictation, coupled with an unprecedented rise in the prices of necessities and material, precipitated abnormal conditions. under which the reconstruction of San Francisco and the rehabilitation of her prosperity could not permanently advance. The failure of Trade Unionism need not, and will not, be permanent. Organized Labor can learn its lesson as well as Organized Capital which is also getting its share of discipline.

Thirdly: As a corollary to the above proposition—the failure of Labor Union rule both in the control of industry and politics—the unprejudiced observer must realize that in this Republic, under a Democratic form of government, the people must rule. In any dispute between Labor and Capital the voice and judgment of the third party—the consumers and passengers—must assert itself. As in industry so in politics, unless the people work and vote for their own interests, the reins will fall into the hands of a class representing either organized capital, organized labor, or organized graft.

Fourthly: The frank and free observer must take recognizance of his own responsibility for all the corruption, sham and disorder that have obtained in San Francisco. The responsibility of individual citizenship has been held too lightly in California. Life has been regarded too cheaply, and transgressions of the law and violations of order have not been regarded with sufficient jealousy and severity by all classes concerned. In reference to the shameful disclosures of graft and corruption in this city it must be remembered that the practice of legislators, in Boards of Supervisors and in City Councils, throughout the State, has been to frequently accept "fees" or other remuneration, and favors, that could not even be qualified by being called "questionable," in return for their services favorable to certain interests at public expense. It is notorious that for many years few bills, even when designed for purely patriotic purpose, could pass both the Senate and the Assembly of the California Legislature without their sponsors' enlisting the services of special lobbyists, either in the guise of attorneys who perhaps chanced to be members of the Legislature or special agents of corporations. The acceptance of "fees," or other less direct remuneration, for special services in the Legislature or on Boards of Supervisors or City Councils has been so notorious that the average citizen has come to regard this practice generally with indifference or occasionally with despair.. And yet we, the people—each individual voter who helps to send such men to public office,—are directly responsible for such infamous practice. It is all too true and too shameful a conclusion that we get no better and no worse government than we ourselves are responsible for and to which we are entitled. The shame of San Francisco's graft and corruption is visited upon each and every one of us, and our civic responsibility must be realized, felt and acted upon before we can look for amelioration.

Fifthly: No fair observer of current conditions can fail to observe with surprise, and indeed alarm, the fact that certain fundamental rights guaranteed by the State and Federal constitutions have been ignored and are contemned in this community. The right of the individual, under the law, to work when, how, where and for whom he please is undeniable and should be inviolate. The right of the small dealer, producer or manufacturer to all the competitive advantages accorded influential and opulent competitors should also be respected. The most sacred principle of American citizenship is involved in such liberty of the individual. On all sides, both employers and employed may be heard protesting against the tyranny of Trade Unionism, its frequently exorbitant demands, its irritating regulations and its too apparent determination to dictate to the employer concerning the conduct of his business or industry. But such protest is usually as weak-kneed and impotent as the protests of those who suffer from the handicap of special privilege accorded to the trusts and large corporations. Despite such rebellion, the submission to the domination of Trade Unionism and the other evils menitoned hitherto has been almost universal in this community. The corporate interests do not openly defy the public, but this is not the case with Trade Unionism, for we are told by the mouthpieces of Trade Unionism that the "Open Shop" in San Francisco is an impossibility, and that "Surely Mr. Calhoun does not wish to be the instrument by which San Francisco is to be offered as a vicarious sacrifice on the altar of the 'Open Shop.'" If the "Open Shop" is an impossibility in San Francisco, involving as it does the undeniable privilege of men to work in lawful occupations free from the dictation or interference of any organized body of men, involving a fundamental right, without the full protection of which there can be no individual liberty either of employer, employe or passerby, then we must admit with shame that San Francisco, like some other large cities, prefers a tyrannical domination which is as unfair as it is un-American, and as unlawful as it is unjust. It has been charged that if the president of the United Railroads persists in the policy of the "Open Shop" he will be responsible for the "commercial ruin" of San Francisco. As to the other charges brought against Mr. Calhoun, let them rest until proved; but as to this specific charge, it is obviously based upon a fallacy. Mr. Calhoun is a builder, not a destroyer. His company forms at once the greatest single investment in San Francisco and is the heaviest taxpayer. Last year alone the United Railroads spent over six million dollars in the improvement of its system. Instead of conspiring for the "commercial ruin" of San Francisco, Mr. Calhoun and other sturdy American citizens realize that the future peace and prosperity of San Francisco and the entire country depend upon the elimination of special privilege or advantage to producer, manufacturer, merchant, trust, corporation, or wage-earner, the last named apparently seems the most difficult to control. If this can be accomplished all may enjoy the blessings intended by those who framed the Constitution of these United States, which guarantees "life, liberty and pursuit of happiness," etc.

These five main considerations must be apparent to the unprejudiced observer and honest thinker. In their assimilation and in a determination to work,—and if needs be fight,—for their establishment, lies the highest ideal and the noblest practice of citizenship.

* * *

The Quantity of Brick Required for a Skyscraper

Some idea of the immense amount of material required in the construction of an ordinary skyscraper may be gathered from statements of one of the experts in charge of the construction work in connection with the new 25-story building which is being erected in Wall Street, New York City, for the Trust Company of America. According to his calculation there are 5,000,000 common bricks for interior use; that is, inside the walls. Then there are 247,000 maroon bricks for the outside, to go with the marble trimmings above the seventh story; 247,000 buff colored bricks, not to mention several thousand red and buff bricks, that are being used in the angles of the buildings. Most of these bricks are 8¼ inches long and the aggregate length of the entire lot would be, say, 45,680,250 inches, or 3,806,687 feet, or a little over 720 miles. He states that in an ordinary 25-story building there would probably be a still larger number of bricks, as in the present instance considerable marble is being used to bring out a colonial effect.

Redwoods of California

THE large resources of the Pacific Coast redwood forests have been little used up to the present time. Until recently this timber only had use locally, but now it has become a competitor of many woods in the Eastern markets. It is being much used in the East for shingles instead of cypress, and to some extent for flooring, siding, laths, and finishing work. There is reason now to believe that its field of usefulness as a structural material will become extensive in the East also. Apropos of this situation the following recent letter is significant:

"U. S. Forest Service,
"Berkeley, Cal.

"Dear Sirs:

"We very much desire that the U. S. Forest Service, at its earliest convenience, will make a comprehensive study of the physical and mechanical properties of redwood lumber.

"The very many inquiries from parties actively engaged in construction work, that are now constantly being made for reliable information concerning redwood, only emphasize the need of the results of the official study of its properties that we now most respectfully request may be made.

"Hoping for your early and favorable consideration, we are,

"Very truly,
"(Signed) REDWOOD ASSOCIATION,
"By A. B. Wilcox."

The Forest Service has decided to comply with the request of the Redwood Association. The work will be done at the testing laboratory in Berkeley, in co-operation with the University of California, and it is thought that the results of these tests will prove of great interest to the users of lumber throughout the United States.

* * *

Where Ignorance is Bliss

"What is a 'Class A building?'" inquired a new arrival at the Hotel Jefferson. "I've been seeing it in the papers right along."

"Ah," responded the night clerk, rubbing his palms together and frowning thoughtfully, "a 'Class A building' is a building—well, it's this way. They divide all the new buildings in San Francisco since the fire into three classes, A, B and C. Class C is anything under five stories; Class B is anything from five to ten stories, and Class A is any building from ten to fifteen stories."

"Oh, very simple, indeed. But what do they call those buildings that are more than fifteen stories?"

"Those, let's see. Oh, yes; those are what we call the re-enforced concrete type."

"Thanks very much. I hope I don't seem too inquisitive."

"Not in the least; oh, not at all. We hotel clerks are only too glad to supply guests with reliable information about the city."—Chronicle.

* * *

The beautiful Vendome Hotel in San Jose has recently been rebuilt from plans by Mr. Weeks, who is also the architect of the palatial Dougherty mansion now under construction in the Garden City.

A Plea for Better Building Inspection

THE following letter has been received by the San Francisco Building Inspector from the headquarters of the International Building Commissioners' Society, at Washington. The matter is one of the most important that confronts a municipality today; vastly more so than are most of the political and economic problems to which the press devotes so very much space. The letter is as follows:

"Dear Sirs:—Great conflagrations like those of Baltimore and San Francisco center popular attention for awhile upon the importance of the fire question, but between times we seem to forget that fire is the greatest economic waste of a ruthlessly prodigal people. We have gotten to the point where our "normal" fire loss is nearly a million dollars a day. With all our phenomenal building activity we scarcely replace the destroyed property. It is a condition that is intolerable, a waste that is positively indecent, a national crime. Our average lesser city that escapes with a loss of a half million a year feels particularly lucky; in Europe a city of similar size that has $50,000 of fire loss thinks itself sorely stricken indeed. It behooves us to whom is intrusted, to a degree at least, the safety of our cities to not wait for the next great conflagration to inspire vigorous action, but to keep hard at work and most earnestly endeavor to ameliorate the conditions by every means in our power.

"Our attention should first be given to the new buildings. We must see to it that no more fuel is added to our already over-combustible cities. The society has adopted a uniform and model building ordinance, but since the Underwriters have come out of their lethargy and awakened to the full importance of safe construction and are hard at work in an effort to get the city authorities to adopt their model building code, we should be thankful for their co-operation and, rather than have divergence of effort let us forget our own code and clamor loudly for the adoption of theirs, anything that will give us better, more fireproof new buildings.

"Let us beseech our cities for more authority and more assistance so that we may also carefully inspect, and frequently, all the old buildings. We should compel their owners to eliminate the fire-traps, to close off open elevator and stair wells, to protect their exposed windows and to minimize in every way possible the fire hazard. We should constantly preach the diminution of units of space in buildings, cutting these off with fire walls, fireproof doors, etc., so as to confine the fires that are bound to occur to narrow limits within which they can easily be fought.

"Nothing can help us more in this arduous and oftentimes thankless task than fraternal co-operation and mutual support between ourselves. We should oftener get together and in the absence of that possibility our intercommunication by letter should be most frequent. The experience of one is bound to greatly help all the others and perhaps prevent many of them from having to go through the same ordeal. Make of me a medium of exchange. I am only too glad to get personal letters from you, copies of your reports, etc., that in turn I shall do all I can to transmit to the others. Just now I am particularly anxious to receive reports showing the cost of your office, giving number of assistants, etc., to your city; what steps have been taken to enlarge the fire limits; what failures, collapses, etc., of experimental and defective buildings have you had since January 1st; what development has there been and the general feeling there is toward curtailing the height of buildings. Indeed, anything that interests you will be of interest to us all. Sincerely yours,

F. W. FITZPATRICK,
Executive Officer."

Successful Heating by Hot Air Furnace

IN CONSIDERING the heating of a modern building by means of a hot air furnace, the first and most important consideration will be the location of the furnace itself, and of the registers. Air, like water, will always flow in the direction of least resistance; therefore, it naturally follows that in placing registers in a room great care should be taken to favor that location where the least resistance will be met with from the incoming flow of air. As cold air is denser and heavier than warm, it follows that the proper location for a register in a room should be the warmest place in that room, i. e., on that side farthest from outside influences. Having first located the registers, place the furnace, keeping three facts in mind. First, remember that the greater the elevation of a warm air pipe the more rapid the flow of air; second, that the air will flow more rapidly toward the point of least resistance; third, that the velocity of the air is dependent on the height of the outlet above the furnace and on the amount of frictional resistance in the pipe; in other words, on the length of the run and the pressure resistance in the room in which the register is placed. Therefore rooms having the greatest exposure in the direction of the prevailing winds, on the first floor, naturally should be nearest to the furnace and should have a larger pipe and register. Rooms which are remote from the furnace, necessitating a long horizontal run of pipe, should have larger pipes. Aim to minimize the frictional resistance in all pipes by avoiding all square turns or abrupt angles. Insist on having at least one inch rise to the running foot of pipe from the furnace to the register. Long runs of pipe, especially when going through cold rooms, should be wrapped with asbestos paper; pipes going through stone or brick walls should have thimbles one inch larger diameter than the pipe. In the adjustment of the pipe work, bear in mind that the pressure of the air is equal on all pipes at the furnace. If, therefore, some of the pipes do not flow as freely as others, the cause of that trouble may be looked for either in the frictional resistance in the pipes, pressure resistance in the rooms into which these pipes lead, or on the pressure of an adjacent pipe, having the advantage of elevation, and taking more than its proportion of the heated air. Should the trouble be caused by frictional resistance, look for obstacles to the free and natural flow of air, such as abrupt angles, etc., and remove them. If this does not furnish the remedy, then increase the size of the pipe. If the trouble is caused by pressure resistance in the room itself, this resistance is caused by air pressure in the room, and some outlet must be provided before satisfactory results can be obtained. A very satisfactory solution to this difficulty can be had by cutting an opening in the base-board of an inside partition between two studs, and utilizing the space between two studs and plaster walls for the vent duct. The plates on top of the studs must be cut, and the duct be unobstructed to the attic. Generally speaking, the air will find its way out of the attic, but in case it does not do so, an opening can be made in some unused chimney, or some other means employed to overcome the difficulty. When inside air is used all doors must be left open and chimneys or fireplaces closed.

* * *

If the water Wall street has been squeezing out of stocks of late could be used for irrigation purposes, there would no longer need to be a "semi-arid" West.

Among the Architects

American Institute of Architects

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Kent Has Plan to Settle Labor Troubles

According to President S. H. Kent of the Builder's Exchange the organization of a Central Council of affiliated building contractors, as proposed by J. J. Phillips at the stormy meeting of the Exchange held June 11th will not be accomplished for some time, if at all.

Phillips' motion, it is claimed, was not regularly acted upon.

"What the Building Trades Council is to the unions the affiliated building contractors' organization will be to the contractors," said Mr. Kent. "The complaint made at Tuesday's meeting that owners and contractors were responsible as much as unionism for the excessively high wage schedule prevailing in this city is only too well founded. Contractors, urged by owners to complete structures quickly, have been bidding against each other in order to secure workmen.

"The organization that I propose will put an end to this by uniting all the contractors in the city on a certain maximum wage for all classes of labor. Beyond this agreed figures they cannot go. If they do the employers of other classes of labor involved on the particular job will withdraw their men and tie up the work. Such an association will, in my opinion, solve the problem of excessively high wages and fortify us in making a healthy protest against any unreasonable exactions that might be attempted by the Building Trades Council."

Bids Wanted for $500,000 Library

The university regents are to advertise for bids at once for the erection of the new Doe library, for which plans have been drawn by John Galen Howard, the university architect.

The front half of the building is to cost approximately $575,000 and this is the portion to be erected now. The remainder of the structure will be put up as the funds become available. The State will be asked in future years to appropriate money for that purpose. The estate left by Charles F. Doe, amounting to nearly three-quarters of a million dollars, is to be used to pay the expenses of the first portion of the library building. The plans adopted by the regents at their last meeting call for a fireproof structure of white granite like that used in the mining building and California hall. The library building will front the north and overlook the botanical gardens. It will be 90 feet high and cover a ground space about 200 feet square. The roof will be of mission tiling.

Los Angeles Architectural Exhibit

The exhibition by the Los Angeles Architectural Club and Arts and Crafts Society held in the Associated Arts Hall at 718 South Spring street, Los Angeles, was a great success.

The walls of two large rooms were covered with architectural designs and photographs of office buildings and residences erected by Los Angeles architects. On tables were examples of artistic bookbinding, book plates, specimens from the Los Angeles Ceramic Club, including vases, plaques, panels, cups and jars, besides a large assortment of paintings and designs for furniture and fittings. There was also an excellent display of metal work.

The patrons of the joint exhibition were the Ebell Club, Los Angeles Chapter of the American Institute of Architects, Friday Morning Club, Ruskin Art Club and Los Angeles Fine Arts League.

The following committee acted as judges of the drawings: Elmer Grey, Los Angeles; Augustus B. Higginson, Santa Barbara; Timothy Walsh, Los Angeles; Charles Sumner Greene, Pasadena; Irving J. Gill, San Diego; Arthur Roland Kelly, Theo. Eisen, Frank Stiff and Francis P Davis.

Six-Story Hotel

Architect P. August Westburg, of Los Angeles, has made plans of a six-story and basement family hotel building, 60x120 feet, to be erected on the east side of Broadway, between Temple and California streets, Los Angeles, for Julius F. Hall of Alhambra. It will contain one hundred and thirty rooms, fifty bath rooms, closets, etc. The building will be heated by steam and cleaned by the vacuum air system. It will have a passenger elevator, fire escapes, electric lighting, bells and telephone system. The exterior walls and partition walls will be reinforced concrete.

Sacramento Court House

Bids will shortly be called for for the erection of a new court house in Sacramento. Plans by Architect R. A. Herold of Sacramento have been accepted by the Supervisors. The sum of $400,000 has been appropriated for the new building.

Two New Churches

Architects McCall and Wythe of Oakland have plans in their office for two churches to be erected in San Francisco. One is for the Methodist denomination, and the pastor is now in the East raising funds. It is expected that each will cost at least $50,000.

San Francisco Second

According to statistics printed by Construction News of Chicago, San Francisco occupies second place in building activity, New York and Brooklyn being taken as one city. It is significant of this publication that this is the first time since the fire that it has printed San Francisco's statistics. The figures were included in the table only after considerable correspondence and effort on the part of the California Promotion Committee.

Hereafter the figures will be compiled regularly by the committee and printed in the Construction News. In the number of buildings, which indicates their character, there is a remarkable showing in the figures printed. Chicago had 1002 permits with but $200,000 more in total value than the 420 permits of San Francisco called for, while Philadelphia had 2041 permits with $200,000 less of value than San Francisco.

San Jose School Contracts Let

On May 28th the San Jose Board of Education opened bids for the construction of several new school houses and awarded contracts to the following:

Grant and Longfellow schools, Frank Davis of San Jose.

Lowell Grammar school, Morrison Bros. of Santa Clara.

Horace Mann school, Building and Construction Company of San Francisco.

Bids for the construction of the San Jose High school were not awarded to anyone, owing to a change to be made in the plans, but bids will be readvertised and will be decided on July 18th.

Bids for plumbing were also held over until that date.

The heating and ventilating contracts will be let at this time also.

Beaux Arts Society

The Society of Beaux Arts Architects of California was organized in San Francisco June 17th. Its object is the education of the younger men of the community who are striving to become architects. The meeting was held at the San Francisco institute of art. The following officers were elected: President, John Galen Howard; vice-president, Arthur Brown; secretary, W. Applegate; treasurer, Loring P. Rixford.

Preceding the meeting a dinner was enjoyed at the Fairmont. Among those present were B. R. Maybeck, Jules Godart, Charles Peter Weeks, Arthur Brown, Lewis P. Hobart, Loring P. Rixford, Albert G. Lansburgh, Mr. Van Benthuysen, John Baur, E. F. Champney, Mr. Applegate, John Bakewell, George W. Kelham.

Cannot Supersede Howard

Attorney Charles Snook has decided that Architect John Galen Howard, professor of architecture, cannot be superseded by the state architects in planning buildings for the University of California.

Under the law creating the office of state architect, Governor Gillett authorized Sellon & Hennings, the appointees to that office, to draft plans and have supervision of work on the Greater University, and the buildings at the State Farm at Davisville.

When this was done the Regents inquired into the status of things, asking Attorney Snook of the board to give an opinion after looking into the law. He says that Professor Howard cannot be superseded legally by the state architects, but should have charge of all work done for the university.

Move Downtown

G. A. Wright, George Rushforth, and B. J. S. Cahill, associate architects, formerly of 2277 California street, near Webster, have removed their architectural offices to 571 California street. During the past year they have been one of the busiest firms engaged in the rebuilding of San Francisco. They have outgrown their quarters in the Western Addition, and in establishing themselves "down town" are in line with the general movement in that direction. The firm's new offices occupy the second floor at 571 California street, near Montgomery, the premises owned and occupied by the Pacific States Savings and Loan Company and directly opposite the site of the San Francisco Savings Union building.

Vacation for Engineer Breite

W. W. Breite, the popular structural engineer, left June 15th on a two-months' business and pleasure trip. He will go as far north as Seattle and as far East as Boston. While absent Mr. Breite will study the steel construction work on some of the big office buildings under construction in Chicago, Boston and other cities. He will write of his observations in a series of specially prepared articles for The Architect and Engineer.

6208 Tons of Steel

It will require 6208 tons of structural steel for the Phelan Building. The material has already begun to arrive from the East. The American Bridge Company are the contractors.

Money in Sight for Rebuilding –

The San Francisco Bond and Mortgage Company has been incorporated and this action initiates a practical plan to bring funds to the city for the reconstruction of the burned district. The enormous amount of money required in the rehabilitation of San Francisco has already, it is said, drawn heavily upon the local banks and has exhausted, in a large measure, the usual sources of financial supply, yet the work of rebuilding the city is only just begun.

Loans will be made only on properties situated within the fire limits of San Francisco and no loan will exceed 60 per cent of the appraised value of the land and building. The borrower will be required to furnish the company with title insurance and fire insurance. All appraisements of values will be made by a real estate agent and by an architect appointed by the company.

Among the initial subscribers to the capital stock of the San Francisco Bond and Mortgage Company are the following men, prominent in the financial and commercial affairs of the city, and the amounts subscribed by each:

John Lloyd	$20,000
David F. Walker	50,000
Benjamin M. Gunn	10,000
J. Dalzell Brown	25,000
Rufus P. Jennings	10,000
W. J. Bartnett	25,000
W. P. Plummer	15,000
Marcel E. Cerf	10,000

Ready to Take Bids

Plans for Oakland's new $2,000,000 hotel have been practically completed by Architect Hardenberg of New York, who is now on the Coast and will remain until the construction work is well under way. Bids for the erection of the big hostelry are to be taken at once. The financial backers of the enterprise are a number of leading Oakland bankers. The hotel is to occupy the lot bounded by Harrison, Alice, Fourteenth and Fifteenth streets.

Berkeley's New City Hall

Nearly a dozen competitive plans have been offered by as many San Francisco and Oakland architects for the proposed new City Hall. Architect John Galen Howard has tendered his assistance to the town trustees in their task of selecting the best set of plans. Mr. Howard will give his services gratuitously.

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OF CALIFORNIA

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ARCHITECTS NEED REST

The temporary cessation of building operations in San Francisco has given the overworked architect and draughtsman a well earned breathing spell. To appreciate how badly they need a rest, one only has to consider the vast amount of work that has been turned out by them since the big fire. Employing from three to fifteen draughtsmen and working oftentimes ten and twelve hours a day for a solid year, it is no wonder the architect is glad to see a momentary let-up, for now he can break away from the office and enjoy a change of climate and environment without injury to his business. In his travels or musings he can gather fresh thoughts and new ideas which will help him and benefit the city when he returns to resume his labors. The present dullness is but temporary. It cannot be otherwise for San Francisco must be rebuilt. Another three months will find the city again plunged into a period of unprecedented building activity.

IF YOU'RE A QUITTER, DON'T ADVERTISE

These are days when the advertiser is disposed to get "cold feet". It's the time of all times when he should use a little printer's ink. When times are good he argues that he don't need to advertise because he's got all the business he can attend to. When things get quiet he wants to economize and the first thing he does to cut expenses is to shut off his advertising. If he only could be taught to realize how fatal the mistake. To stop advertising when business is dull means to court failure. Therefore, if you are a quitter, don't advertise.

OUR CITIZENSHIP EXPENSIVE

The average American believes himself blessed by the accident of birth that made him such. The advantages are many but the cost is also great. He is expected to voluntarily contribute to many funds but is compelled to pay a high quota to very many others. For instance, the mere running expenses of a city like New York amounts to $31 a head, Chicago comes next with $13 a head, while Washington, Schenectady and such cities spend $11 and from that on down to $6. Then crime costs us enormously, the care of State and other prisons, the detection of crime and all that sort of thing eats up a total of over $700,000,000 a year. But the most useless and inane of all our expenditures is that of fire, which is equivalent to a tax of nearly $8 per head. Part of that goes to a gamble we make with the insurance companies to reimburse us for part of what we lose, but the greater amount is utterly wasted in smoke. Besides the loss of property entailed by fire there are yearly sacrificed nearly or over 6000 lives. Fully $100,000,000 of the fire loss is of incendiary origin or the grossest criminal negligence. And these conditions are bound to obtain until our people have grown to be sensible enough to build better, more fireproof structures. No country on earth submits to the fire-tax that we do.

Architects' Law is Valid

Chief Justice Beatty of the State Supreme Court has denied the application of Edward C. McMannus for a writ of error to perfect an application for a writ of habeas corpus to the United States Supreme Court to test the validity of the law affecting architects. The law provides that all persons wishing to practice the profession shall submit to an examination before the State board, which McMannus refused to do. He was arrested and fined, and, to test the law, carried the case up to the Supreme Court. The decision rendered tends to sustain the law.

William Le Baron Jenney

WILLIAM LeBARON JENNEY, one of the most widely-known of American architects, who won international fame as the originator of the plan of using steel framework in big buildings, died June 15th at his home in Los Angeles after a long illness. For many weeks only the amazing vitality of the man, the result of an active life, kept him alive. Despite the weakness incident to advanced age—he was in his seventy-fifth year—he kept up the determined but hopeless fight.

Mr. Jenney was a native of Fairhaven, Mass., the date of his birth being September 25, 1832. He was aged 17 when gold was discovered in California, and he joined the rush, making the voyage to the Golden Gate via Cape Horn in the ship Friendship, Capt. Stott. He did not make a success of mining, and returned to New York via the Hawaiian Islands, China and Manila, arriving home in 1851, having circled the globe. He took an engineering course at Harvard, and there mastered Spanish and French. Going to Paris he took a course in the Ecole Centrale des Arts, receiving a diploma, which, when the Civil War broke out, won for him a commission in the engineering corps of the Union army. Before the war ended he attained the rank of Chief of Engineers of the Fifth Army Corps.

In 1867 Mr. Jenney married Elizabeth H. Cobb of Cleveland, Ohio, and took his bride to Chicago. His opportunity came after the great fire. In the rebuilding of Chicago Mr. Jenney became a factor, and some of the largest buildings of that period were designed by him. His greatest work, and the one which made him internationally famous, was when, in 1884, he constructed the first steel-frame building along plans which were so perfect that they are universally followed to this day. His experiment was watched with interest by all prominent architects, many of them predicting failure, but the building which he erected for the Home Insurance Company still stands, and Mr. Jenney lived to see his plans adopted by builders all over the world. Mr. Jenney took a prominent part in the construction of the building of the Columbian Exposition in 1893, the Horticultural building being entirely planned by him.

In 1905 Mr. Jenney retired from active work and moved to Los Angeles. He was an honorary member of California Chapter, A. I. A.

The Publisher's Corner

A Record Breaking Steel Contract

[See Illustrations Pages 76 and 78.]

The completion of the steel frame of the new Bank of Italy, at the corner of Clay and Montgomery streets, has been pronounced an achievement in speed construction without a parallel on the Pacific Coast. Just eighty-three days is the record made from the date the contract was signed till the last piece of steel was placed in position. To say that the bank officials were pleased is putting it mildly. The work was finished days sooner than they had anticipated.

Not only has the job been pronounced an exceptional one from the standpoint of speed, but it has been a marked success structurally speaking. While the work was done quickly it was done well and there is no finer example of good steel construction in San Francisco today. The speedy completion of the steel frame is considered all the more remarkable in view of the strained conditions under which the work was carried on, coming at a time when labor was scarce and material high and hard to get.

The building is of the Class A type, 50 by 60 feet, and eight stories in height. The architect, Frank T. Shea, had his plans accepted in competition with eight or ten other architects. A feature of the building, structurally speaking, is the precaution taken to avoid possible damage from seismic disturbances and high winds. The columns and beams are both anchored to a nicety, and the riveting has been done with the greatest care. The steel work was designed and detailed by W. W. Breite, an engineer of recognized ability, and very naturally Mr. Breite is elated by the successful consummation of his plans. The steel was fabricated by the Central Iron Works, of which A. A. Devoto is president. This company has come to the front rapidly since the fire and has received its full share of the big contracts. The erecting of the steel was done by C. A. Blume, the well-known contractor, and is a very creditable piece of work.

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In New Quarters

The White Ornamental Iron Company, which has been turning out some exceptionally artistic work since the earthquake, announces the removal of its main office and works to De Fremery Wharf, foot of 5th avenue, East Oakland, which is within a few minutes' ride via the Southern Pacific Broad Gauge train to Clinton Station, or via the Eighth street car, leaving Broadway, Oakland, every ten minutes.

The new ornamental iron shop is 100 by 150 feet, and supplied with the most modern equipment. A complete force of skilled workmen is employed. The company also has an electro plating plant, fully equipped for handling architectural and ornamental iron work of all descriptions; also, an up-to-date pattern shop. In another sixty days the company will have a new and complete foundry for high grade ornamental castings in iron, brass and bronze.

Mr. White assures his patrons that all inquiries and orders will receive prompt and careful attention, as heretofore, and a representative will call, upon telephonic request. The company's San Francisco office is 499 Monadnock Building.

Praise for the Hamilton Grate

The following is from an address by Donald McDonald, delivered before the Ohio Gas, Light Association, on Gas Grates:

"Now we come to a third class of grates, known as the Hamilton Grate, one which supplies its own air for burning from out doors; which is charged with all the oxygen nature intended it to have, which is not the case with the air taken from the room which has been occupied. The air is not only taken from out doors to burn gas, (wood or coal) but there is also a large supply of fresh air (taken from out doors) to purify the products of combustion.

"Let me say, in conclusion, that it is the interest and the duty of every gas manager to inform himself and his customers about this most important matter; and to discourage in every way the use of gas for heat, in all cases where the ventilation has not been provided for with such care and intelligence as to insure his customers an atmosphere suitable for human beings to breathe.

"When the combustion is perfect it leaves no odor, smoke or so-called "after damp" givng to the room a pure, wholesome, heated air.

"Gas heat is more convenient than any other heat. It is also cheaper and as agreeable as an open fire-place when such grates as the Hamilton or similar grates are used."

San Jose Contractors

Among the leading San Jose contractors who have done work for Architect Weeks are Florent Gardiser, Theo. F. Heple, R. O. Summers and the Garden City Electric Company. The Santa Clara Valley Mill and Lumber Company has done most of the mill work in San Jose and vicinity for Mr. Weeks, including the Vendome Hotel and the Dougherty house.

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including the Vendome Hotel and the Dougherty house.

Gilhuly & Ambler Busy

Notwithstanding the unsettled building conditions the firm of Gilhuly & Ambler, with offices in the Atlas building, has no cause to complain of business depression. The firm, as Pacific Coast agents for structural steel manufacturers in the East, has lately taken several good-size orders. It will supply the steel for the Pioneer building, a seven-story Class A structure to be erected by the Lindgren-Hicks Company; also the steel for the Marvin building, a seven-story Class A structure designed by Architect Meusdorffer.

Gilhuly & Ambler also represent the Buffalo Steel Company in the sale of twisted high carbon steel bars and spiral high carbon steel bars for concrete reinforcing. The firm is prepared to handle the business very promptly and supply bars cut to the exact length required.

Series of Circulars

Keuffel & Esser Co., 127 Fulton and 42 Ann street, New York, and 40 Oak street, San Francisco, the well-known manufacturers and importers of drawing materials, mathematical and surveying instruments and measuring tapes, have recently distributed a series of circulars regarding their automatic print hangers for the print room; their folding rules of hardwood, steel and ivorine, and of Sperry's Pocket Calculator, which combines the range and accuracy of the straight slide rule with the portability and compactness of the pocket calculator.

Leads All Other Cities

The reconstruction of San Francisco, where so much concrete construction has been specified, makes that city easily the leader in concrete work. Another dry dock in San Francisco harbor has recently been contracted for which will cost $1,250,000.00 and will be the largest in the world. Concrete brick and concrete veneering blocks have become popular in the construction of residences, where lath and steadying walls are to be veneered on the outside. It is one of the handiest ways of using cement building material and some beautiful effects have been obtained. It is also said in some cases to be quite as economical as sheeting and clapboards.—Rock Products.

Something New in Furnaces

The Pacific Heating and Ventilating Company announces that it is prepared to assist architects in preparing plans for heating and ventilating any kind of building from school house to office building. The company has in its employ competent engineers who will contribute their services, either to architects or owners, without expense, and will supply complete working plans for the most approved heating and ventilating systems. The company just now is making a specialty of school-house work, and guarantees to equip a building in a manner entirely satisfactory.

The company has the exclusive handling of something comparatively new in the furnace-heating line and it bids fair to revolutionize things. It is a gas furnace—not a gas grate or gas stove, but a gas furnace, capable of heating any size building in less time and at no greater expense than a coal or wood furnace. No chimney is required. There is no dirt about it, nor is there any unpleasant odor. Strike a match, turn a valve and it's ready. No ashes to carry or coal to handle. The gas heater would seem to satisfactorily solve the heating question for homes, offices, stores and churches. The furnace is already being successfully operated in a number of San Francisco buildings, a list of which, together with other information, price list, etc., will be mailed upon application. The company's office is at 3267 Seventeenth street, San Francisco.

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The Webster Dictionary

The G. & C. Merriam Company of Springfield, Mass., have recently issued a new and enlarged edition of Webster's International Dictionary. It is printed from new plates throughout and contains a supplement of 25,000 additional words, a completely revised Gazetteer of the World, and a completely revised Biographical Dictionary, etc. The book is commended by leading statesmen and scholars and has been the standard in spelling and pronunciation in the government printing office for years. It is a book worth having.

Brick for San Francisco.

The Simons Brick Company of Los Angeles is filling an order for a cargo of common brick to be used in the reconstruction of San Francisco. The vessel is being loaded at San Pedro. The company has also an order from the Alphonso Custodios Chimney Construction Company of San Francisco for 3800 tons of clay blocks. These shipments are the first on record between the two points.

Walter Henderson Busy

Steel contractor Walter Henderson cannot complain of business conditions. Besides quite a little small work he has just taken the contract for erecting the steel on the new Regan building at Powell and O'Farrell streets, San Francisco. This is to be a four-story Class A building, planned by Architects Welsh and Carey. Mr. Henderson is nearly done with the erection of the steel frame for the seven-story Hotel Rex on Turk street.

Hotel at Congress Springs

The Southern Pacific Company has purchased the Louis A. Sage property at Congress Springs, near Saratoga, Santa Clara county, and will at once begin the erection of a fine hotel and outbuildings, involving an expenditure of $200,000. The Inter-Urban track already runs to Congress Springs and it is understood to be the purpose of the company to run its Santa Cruz short line through Saratoga so that picnic excursions may be run to the Springs from San Francisco and other points. A feature of the new buildings will be an immense bath-house.

A. W. Spalding and Max Umbrecht have associated under the firm name of Spalding & Umbrecht for the practice of architecture. Their present offices are at 422-423 Globe block, Seattle.

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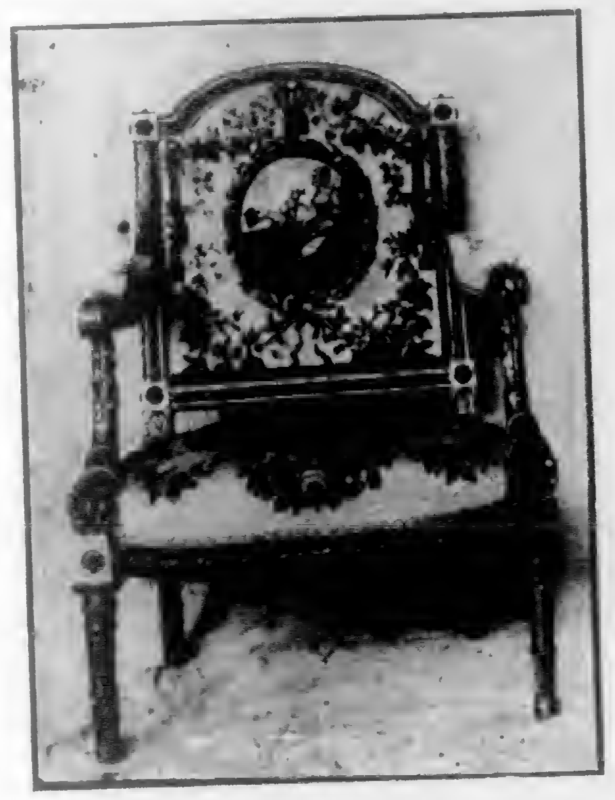

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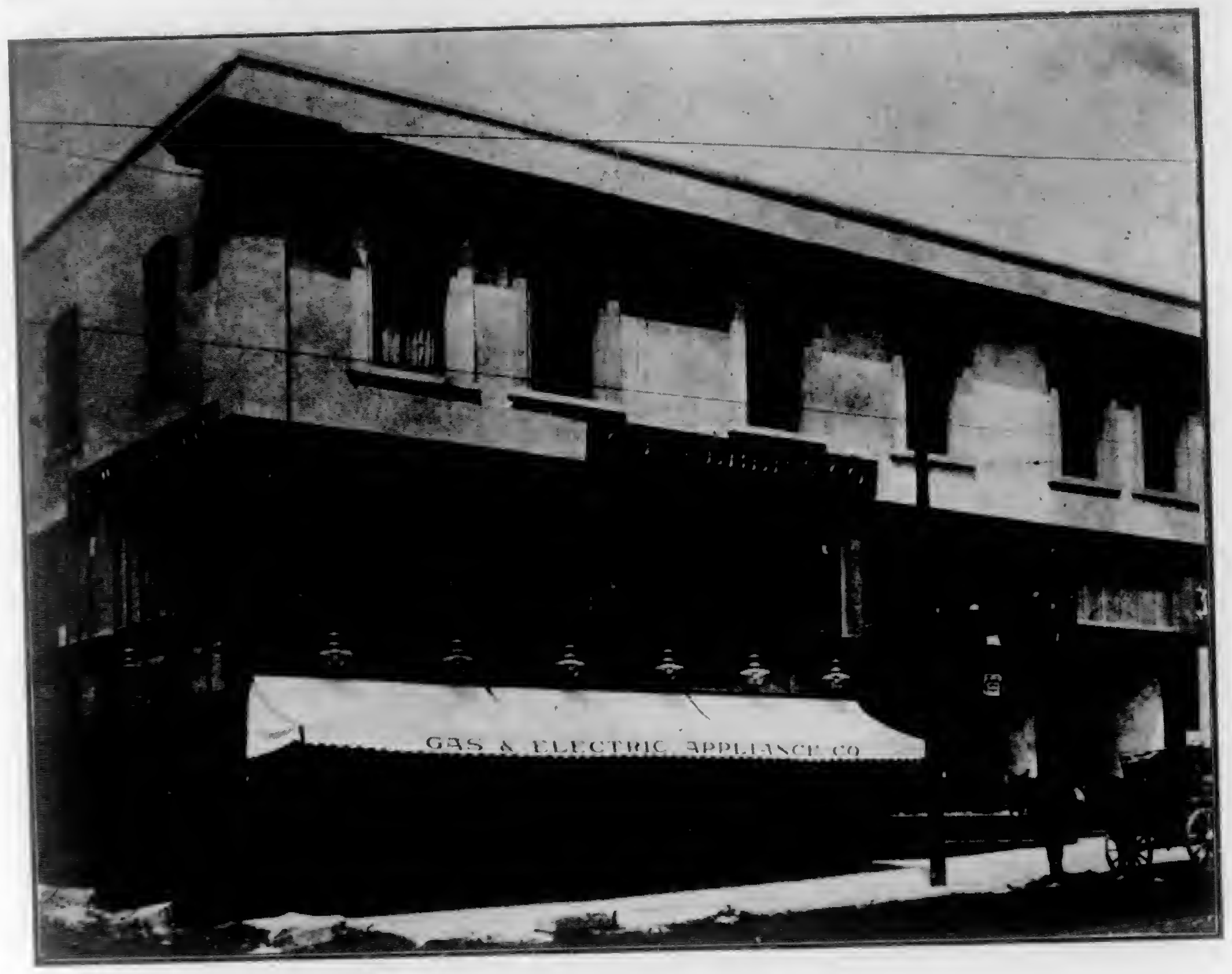


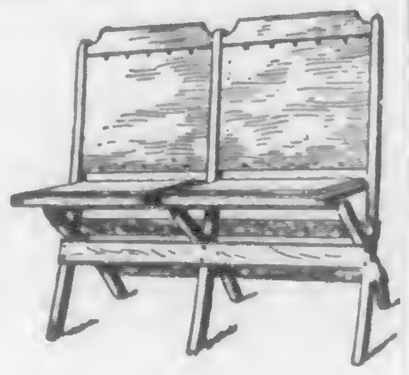
C. F. Weber & Co's. New Home. (San Francisco)

Schastev & Vollmer's New Studio

Although but one year in San Francisco, the firm of Schastey & Vollmer has experienced remarkable success. Having outgrown its modest quarters in the Monadnock building, the firm has moved to 1930 Van Ness avenue, where excellent warehouse facilities have been provided in addition to increased studio accommodations. Abundant light is a feature of the pretty salesroom, which has been charmingly fitted up in the very latest tapestries, rugs, etc. The firm makes a specialty of interior decorating, and since coming to the Coast from New York has fitted up some of the best homes in San Francisco and vicinity. Some photographs of interiors done by Schastey & Vollmer will be shown in this magazine in the near future.

Fireproof Building

A fireproof building for the storing of valuable astronomical photographs has been ordered built at Lick Observatory, Mount Hamilton. The structure will probably be of reinforced concrete and will cost $10,000.



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Some of the big warehouses which have been rebuilt since the San Francisco fire have taken unusual precaution from fire by installing not only complete sprinkler systems but private fire departments. The employes have been drilled to use both chemical engines and hose-wagons. Paul Brant of No. 9 Mission street is coast representative for the Stempel chemical wagon which can be drawn by hand and contains a chemical tank with sufficient fluid to extinguish a good size blaze. Mr. Brant also sells the Stempel Gold Medal and Aaron hand extinguishers. Large size chemical engines, hose-carts and hook and ladder trucks are also turned out by Mr. Brant's company, and a number of these wagons are in use in various cities and towns on the coast.

Royal Heating Co.

This firm is now located in their own building on Fourth street, between Harrison and Perry streets, San Francisco, where they carry a large and complete line of heating appliances, consisting of the celebrated royal steam and hot-water heaters and hot-air furnaces and a full line of registers; both of the well-known Foster Wall and Tuttle & Bailey floor patterns, radiators, radiator valves, air valves, floor and ceiling plates, asbestos pipe covering and paper, etc.

Locating here some eight years ago and beginning in a small way they have had a phenomenal growth, brought about by prompt and close attention to the wants of their customers and doing the best work in all their lines that it is possible to do. They are agents for the Van Auken System of Vacuum heating, which is now being installed in some of the best buildings in San Francisco, Berkeley and Oakland. They do all kinds of heating and ventilating, using steam, hot water, hot air, or combination systems, making a specialty of heating and ventilating schools, hospitals, churches, or residences where blowers are used in connection with hot-air heaters.

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Did Work for Architect Weeks

Chivers Bros. of Pacific Grove have done quite a little work in that section for Architect Weeks. Among the buildings erected by this firm are the post office building in Pacific Grove, the Prussia residence building for Mrs. C. A. Rowe, and the Roderick block.

Contractor H. D. Koch built the E. C. Smith bank at Pacific Grove and the Goldstein building in Monterey. Mr. Koch has the reputation of doing first-class work. With the completion of the Goldstein building he will remove to Berkeley, where he has a number of jobs on hand. His present address is 812 Delaware street, Berkeley.

The Globe Electrical Company of Monterey has wired nearly all Mr. Weeks' buildings in Monterey county. The list includes several fine residences, the Goldstein building, the Work Theater, the E. C. Smith bank, the Roderick building and the Hazel Hawkins hospital.

Frank Peirce is the leading hardware and plumbing man in Monterey. He has a fine store and a large workshop. Mr. Peirce makes a specialty of sheet iron and metal work for cornices, skylights, etc., and he has supplied many of Architect Weeks' buildings with the aforementioned materials. Mr. Peirce always has a large stock of plumbing supplies and fixtures on hand for quick delivery.

One of the best-known contractors in San Benito county is E. J. Sparling of Hollister, who has built practically all of Architect Weeks' buildings in that vicinity. The list includes the Hawkins hospital, Masonic hall, the Grangers Union building, and the residences of J. G. Hamilton, M. Connell, W. J. Cagney and J. R. Dunn. The latter is one of the finest residences in California. It is the Colonial style and will cost when finished $25,000.

Recent work done by O'Brien and Wilson, contractors, in all kinds of masonry, includes the Hazel Hawkins hospital in Hollister, the Goldstein building in Monterey, and the post office building

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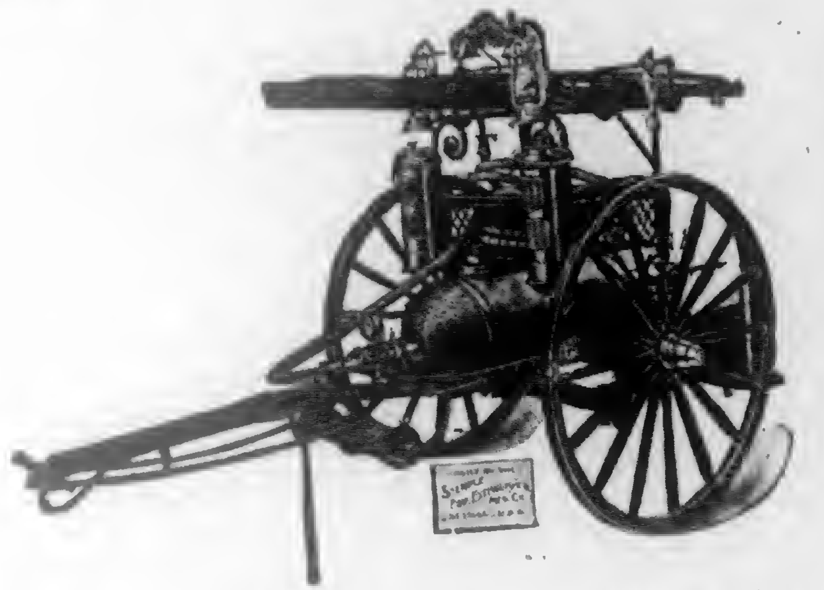

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Phone, Main 69 Watsonville, Cal.

and Smith bank in Pacific Grove. The firm makes a specialty of reinforced concrete construction.

Cooley and Giles, painters and paper hangers, at Hollister, have made for themselves an enviable reputation as interior decorators of residences and country bungalows. Some of the prettiest homes in the vicinity of Hollister were painted by this firm, including the handsome Dunn residence, Dr. Tibbett's home, the court house at Hollister and the Hazel Hawkins hospital.

Whitcomb and Fenton are well-known Salinas contractors. The former has been in the contracting business nearly a quarter century. Among the buildings erected in Salinas by this firm are the Archer block, First National Bank, George White building, Weideman block at Gonzales, and alterations to the Salinas City high school.

One of the best-known firms in Salinas are Anderson & Dougherty, plumbers and tinners at 261 Main street. This concern has done the plumbing in practically all the big buildings erected in that city the past few years. Their work in every instance has given satisfaction. The buildings which they have equipped with plumbing fixtures are the Monterey County jail, the Spreckels Sugar Company's office and hotel, forty cottages of the Spreckels Sugar Company, Elks' hall, Salinas City high school, Salinas opera house, parochial school, Masonic hall, armory, Odd Fellows' hall, and the Jos. Bardin hospital.

In connection with the building of the new Casino and bath house at Santa Cruz considerable praise is due F. R. Cummings, superintendent of construction, and W. J. Keating, general superintendent, both of whom worked indefatigably to insure the successful completion of the buildings in time for the opening of the summer season. The buildings are all well constructed and are a credit to the architect and builders.

The outside cementing of the pavilion was done by Van Wagner Bros., while the concrete work for the big plunge was done by Lease Bros. Both jobs have caused very favorable comment. J. E. Manetta did the staff and stucco work, which are a feature of the exterior decorations.

F. A. Hihn Company

The F. A. Hihn Company controls four large lumber yards which supply much of the trade in Santa Cruz, Watsonville, Salinas and Hollister. The company maintains planing mills at Santa Cruz, Watsonville and Hollister, and has saw-

GENERAL VIEW OF MILL AT WATSONVILLE

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CONTRACTOR AND BUILDER

General Superintendent of the Santa Cruz Beach Company's New Casino and Bath House. — W. H. Weeks, Architect.

29 BLAINE STREET, SANTA CRUZ

mills at Laurel and Boulder Creek, in addition to two large shingle mills. The special Star redwood shingle, specified by Architect Weeks in all his work, is manufactured by the Hihn Company. The shingle mills are at Laurel and Watsonville. The two planing mills have a capacity of 100,000 feet a day, and the shingle plants will turn out the same number of shingles daily.

Among the leading San Jose contractors who have done work for Architect Weeks are Florent Gardiser, Theo. F. Heple, R. O. Summers and the Garden City Electric Company.

Loma Prieta Planing Mill

The Loma Prieta Planing Mill at Watsonville is one of the largest in Santa Cruz county. The company has been doing business in Watsonville nine years and employs a force of from 50 to 75 men. Its present plant was enlarged about four years ago and a year ago one of the largest dry kilns on the Coast was installed at considerable expense. The kiln has a capacity of 60,000 feet a day. The company aims to do all kinds of mill work in first-class manner, and particular attention is paid to fitting up dry goods stores and offices. Tanks, sash and doors, etc., are also given attention. W. H. Ames is mill superintendent and handles all architects' plans that are sent in for estimates. The company holds a membership card in the San Francisco Builders' Exchange. Its officers are: President, Timothy Hopkins; treasurer, N. T. Smith; vice-president, A. C. Bassett; secretary, A. Williams.

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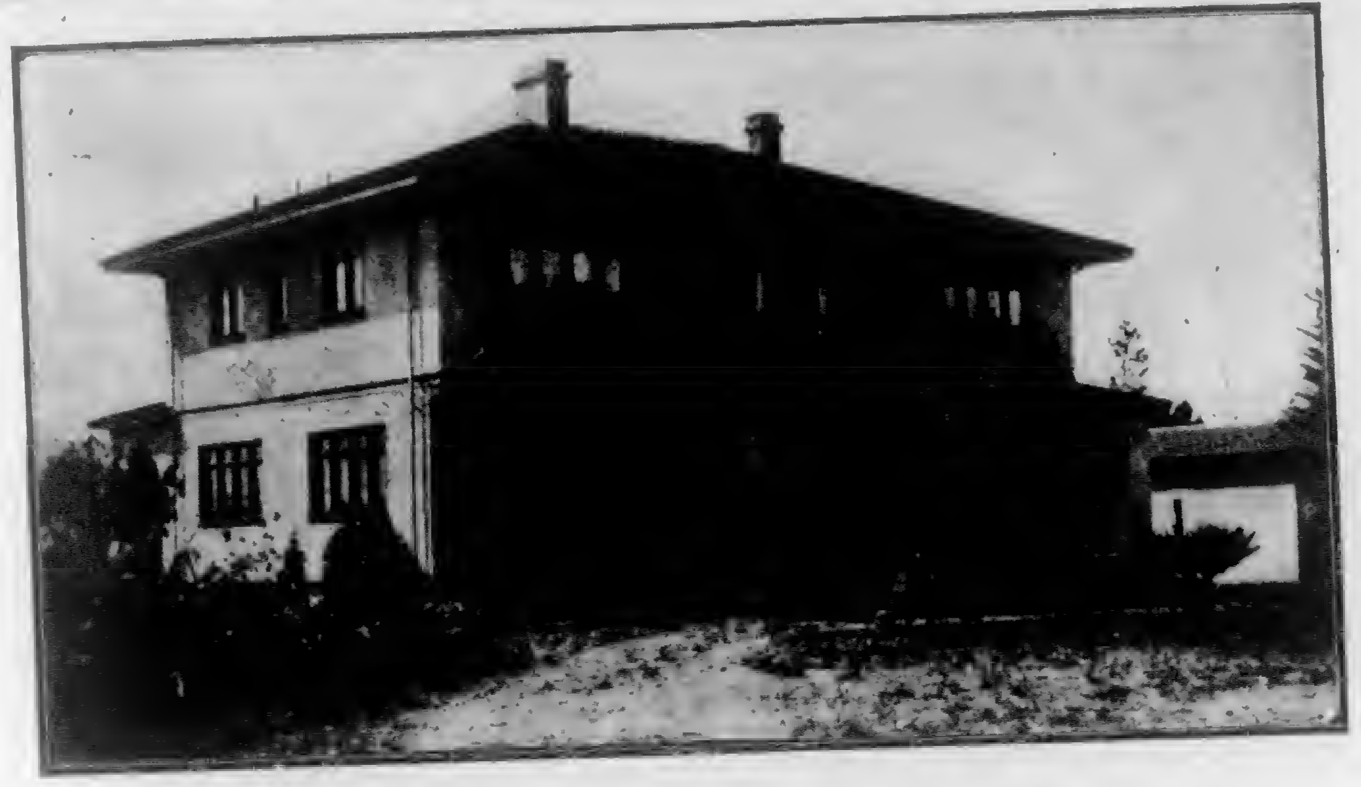

Residence of George Chittenden. Santa Cruz
Wm. H. Weeks. Architect Cementing done by Van Wagner Bros.

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Will Use Terra Cotta

The Sonoma County Board of Supervisors have determined to have a terra cotta finish for the new courthouse to be constructed at Santa Rosa. In their call for bids on the building they specified the finish must be either cement or terra cotta. The bids showing a difference of $75,000 in the two finishes, and the board adjourned from last Saturday until yesterday to determine which finish they would accept. Many of their constituents urged the acceptance of the terra cotta finish, and the board preferred that finish also. The contract was awarded to the Rickon-Ehrhart Engineering and Construction Company of San Francisco, and work on the mammoth foundations will be begun at once.

The firm of Hebbard & Gill, architects, has been dissolved. The business is now carried on by Will Sterling Hebbard, whose address is the Grant building, San Diego.

In a very tasty announcement, the firm of Crim & Scott, architects, announce their removal to 425 Kearny street, San Francisco.

Oakland Notes

The Pacific Coast Lumber Company is to spend $17,000 in the erection of a new planing mill south of the Western Pacific line, between Eighth and Ninth avenue, East Oakland.

The Society of the Seventh Day Adventists is to build a new church at Twenty-fifth street to cost $11,000. Folding chairs are to be purchased.

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Charles William Dickey, Architect

Frontispiece, The Architect and Engineer of California, July, '07

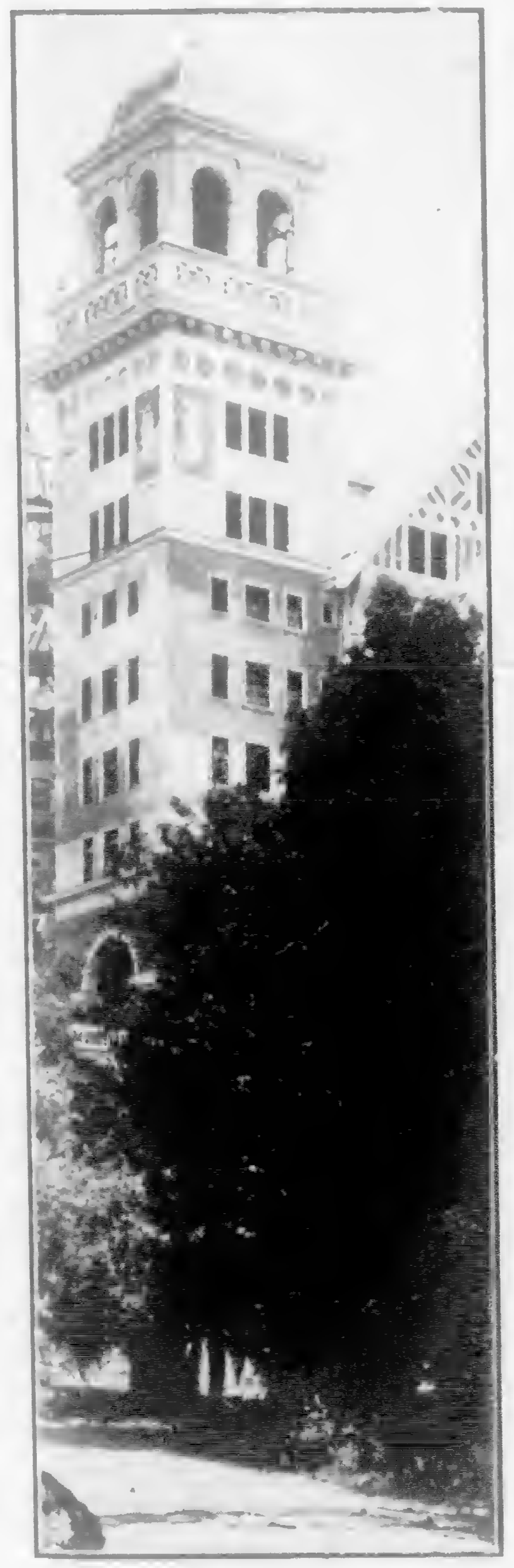
THE

Architect and Engineer

Of California

Vol. IX. JULY, 1907. No. 3.

The Work of Charles William Dickey, Architect



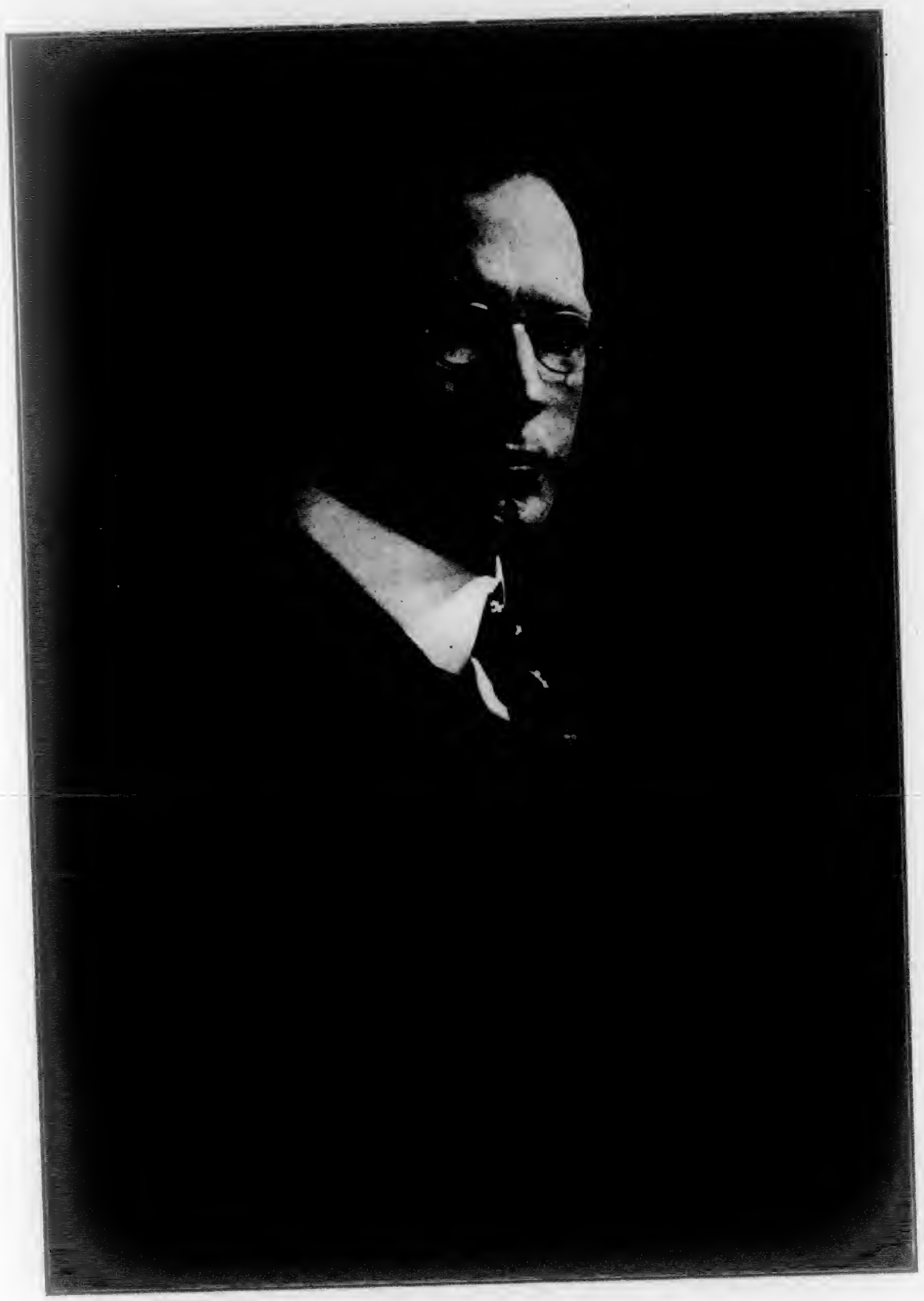
CHARLES WILLIAM DICKEY, whose architectural work is published herewith, was born in Alameda, California, in July, 1871, but his early life was spent in the Hawaiian Islands. He is a son of Senator Charles Henry Dickey, of Honolulu, T. H. His studies were pursued at the Oakland High School and in 1890 he entered the Architectural Department of the Massachusetts Institute of Technology, in Boston, Mass., from which institution he was graduated in 1894.

After working a short time in the architectural offices of H. C. Kock & Company, of Milwaukee, and Reid Bros., of San Francisco, he returned to his island home to begin his architectural career as a member of the firm of Ripley & Dickey, Honolulu.

He was at once confronted with the difficult problem of adapting modern architectural forms to tropical conditions. The task of solving this problem brought out his imagination and originality and had a great deal to do with his future development. That he caught the spirit of his environment and truthfully portrayed this spirit in all his Hawaiian work will be clearly seen by reference to the pictures here published. His simple and artistic houses with their broad lanais (porches), projecting eaves, low pitched roofs and other features fairly breathe the atmosphere of Honolulu, the Paradise of the Pacific. He has left his stamp upon the architecture of the Islands and has done more than any other man to raise it to its present high standard.

In 1903 the financial depression in Honolulu led him to try his fortunes elsewhere and he opened an office in Oakland, California, under the firm name of Dickey & Reed. Mr. Reed later withdrew from the firm to pursue his architectural studies at the Massachusetts Institute of Technology.

Mr. Dickey's success in Oakland has been phenomenal and he is now generally recognized as one of the leading architects of the city. His most notable buildings are the Claremont Hotel and the Oakland Bank of Savings. All



Charles William Dickey, Architect

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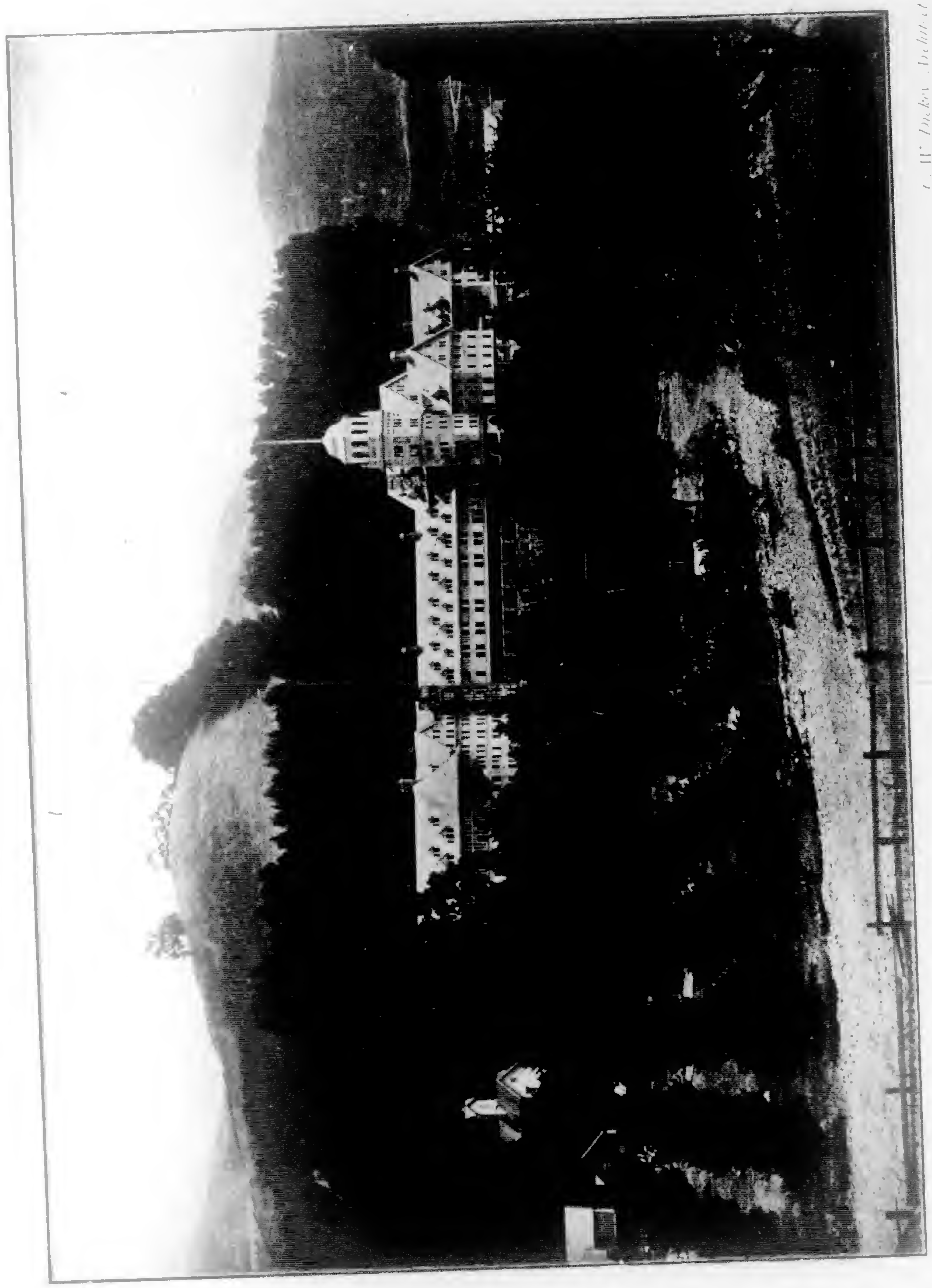
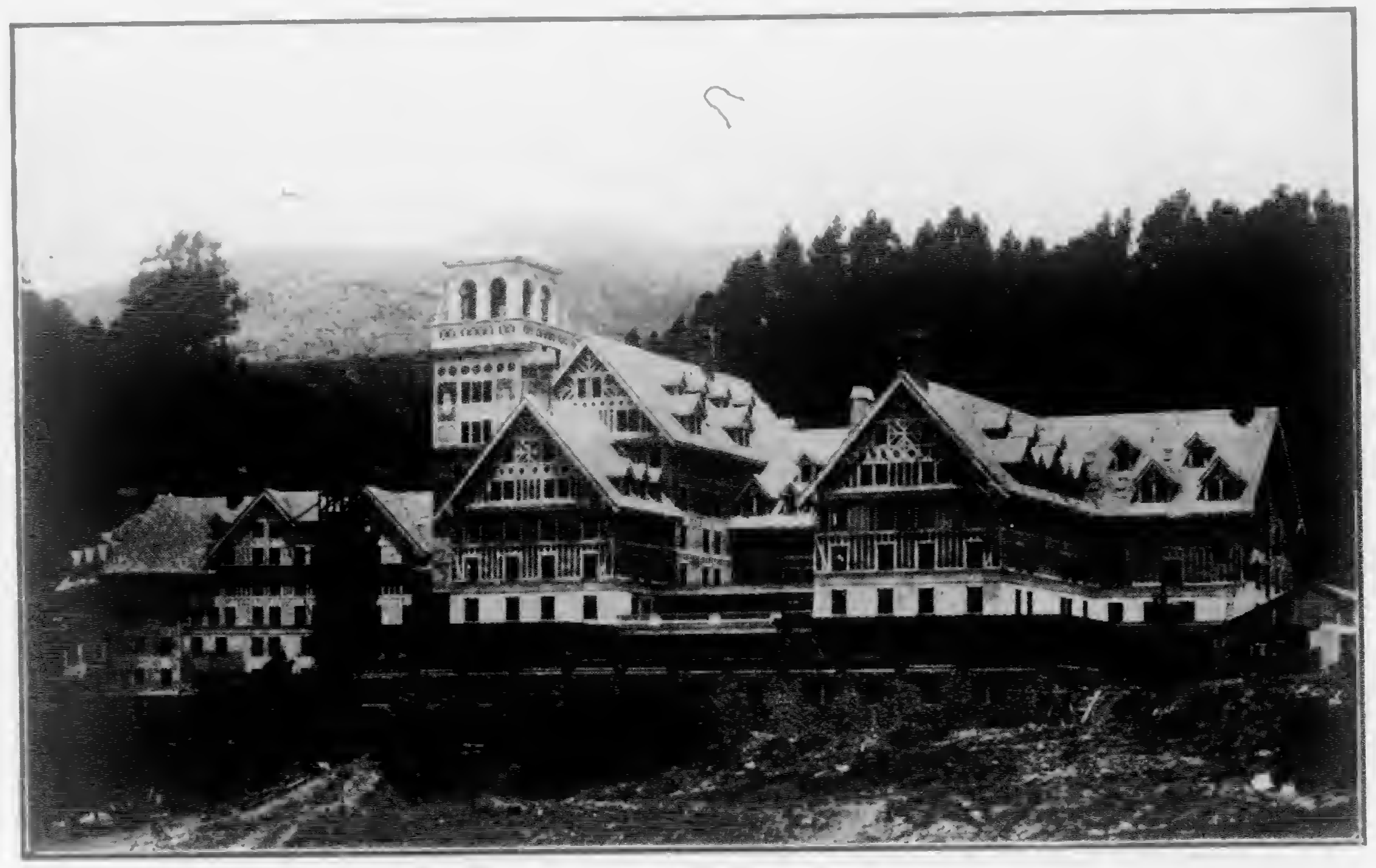


[illegible] Claremont Hotel, Berkeley C. W. Dickey, Architect



Front View of the Claremont Hotel, Berkeley *C. W. Dickey, Architect*

of his work bears his personal stamp showing originality and imagination controlled by a thoroughly trained mind. Each of the buildings he has designed clearly expresses the purpose for which it is intended, and is in perfect harmony with its environment. These two points are absolutely essential to any successful architectural composition and they are never lost sight of in any of his work.

The Claremont Hotel is probably his greatest achievement. He won his appointment as architect for this great tourist hotel in competition with some of the leading architects of the Pacific Coast. The manner in which he has grasped the subject and taken advantage of every feature of the beautiful site is really remarkable. The building appears to grow out of the earth and conforms to all the undulations of the ground and the sweep of the hills. The picturesque Elizabethan style which he has adopted is most suitable to fulfill all the conditions. The hotel looks inviting and home-like and will doubtless prove one of the most successful tourist hotels of the Pacific Coast.

The Oakland Bank of Savings building is a very pure piece of classic design and represents all that is best and purest in commercial architecture. The construction and finish of this building rank it with the finest of its kind in the United States, and it will be as nearly earthquake and fire-proof as the achievement of modern skill and science will permit.

Space will not permit the description of many of the buildings here depicted, but the California State building, at the Lewis & Clark Exposition, should be mentioned as being especially interesting to Californians. In this building are cleverly combined the perfect reproductions of the fronts of four historic California missions and the dome of a fifth. In planning these reproductions, Mr. Dickey was fortunate in securing some very fine photographs of these mission buildings taken in the early sixties, before they had been remodeled and restored, and hence the State building at Portland possessed special historic interest.

Mr. Dickey is a member of the American Institute of Architects and of the San Francisco Chapter of the same body.

Equipped with Otis Elevators Claremont Hotel Berkeley C. W. Dickey, Architect

Front View of the Claremont Hotel, Berkeley *C. W. Dickey, Architect*

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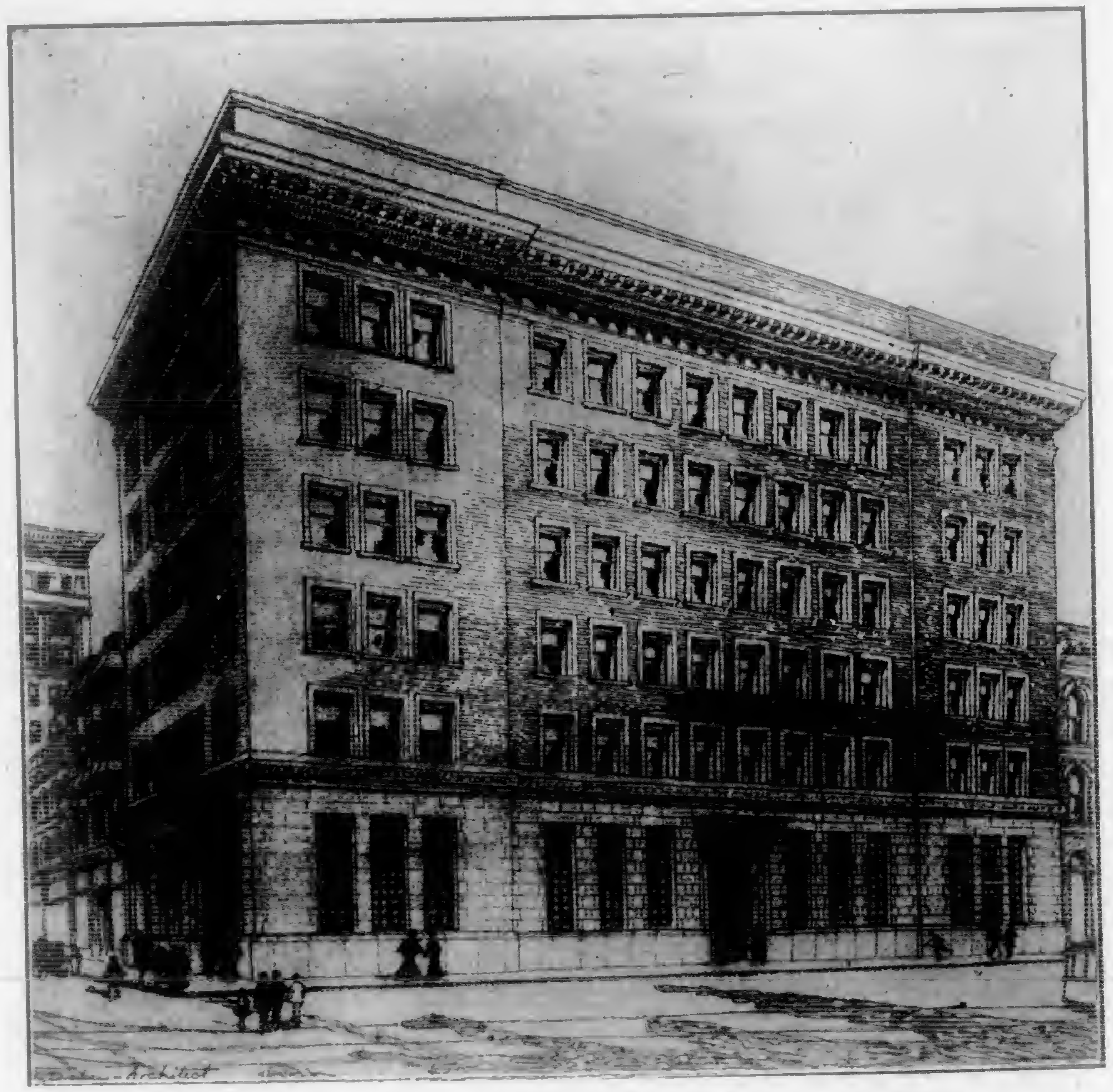
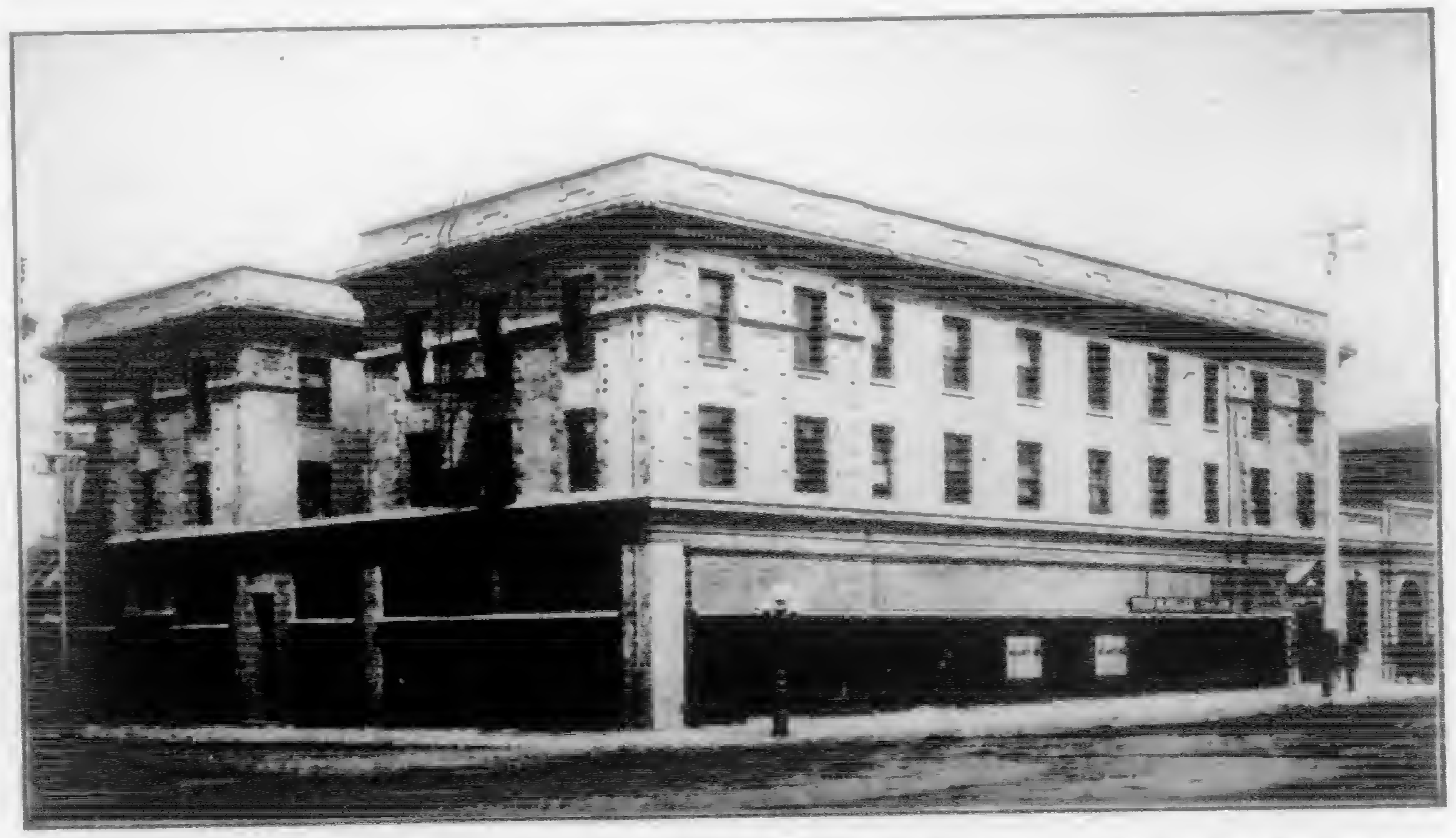
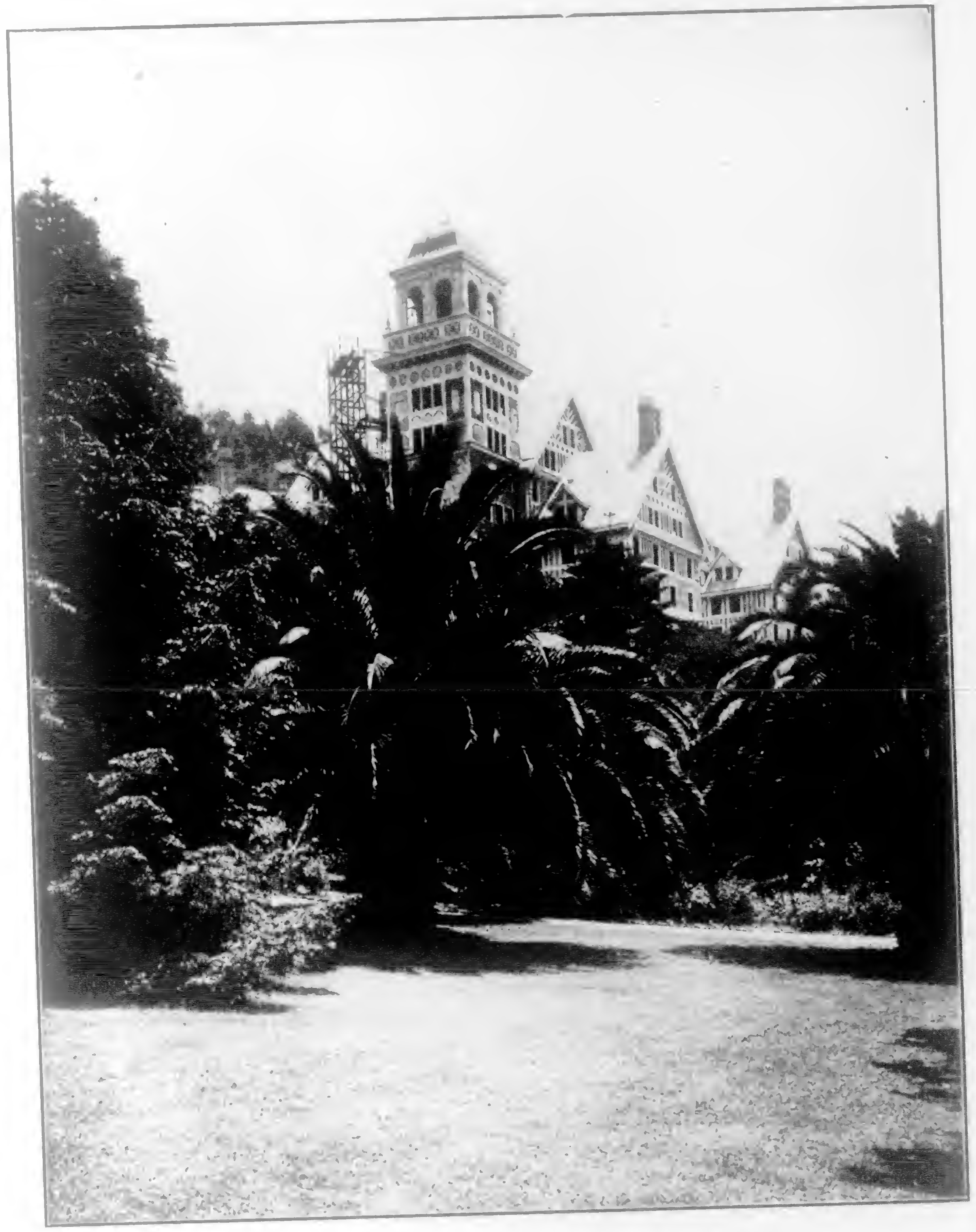
Looking Towards the Claremont Hotel, Berkeley, from one of the Driveways
C. W. Dickey, Architect



Equipped with Otis Elevators Oakland Bank of Savings Building C. W. Dickey, Architect



Morse Apartment House and Post Office, Berkeley C. W. Dickey, Architect



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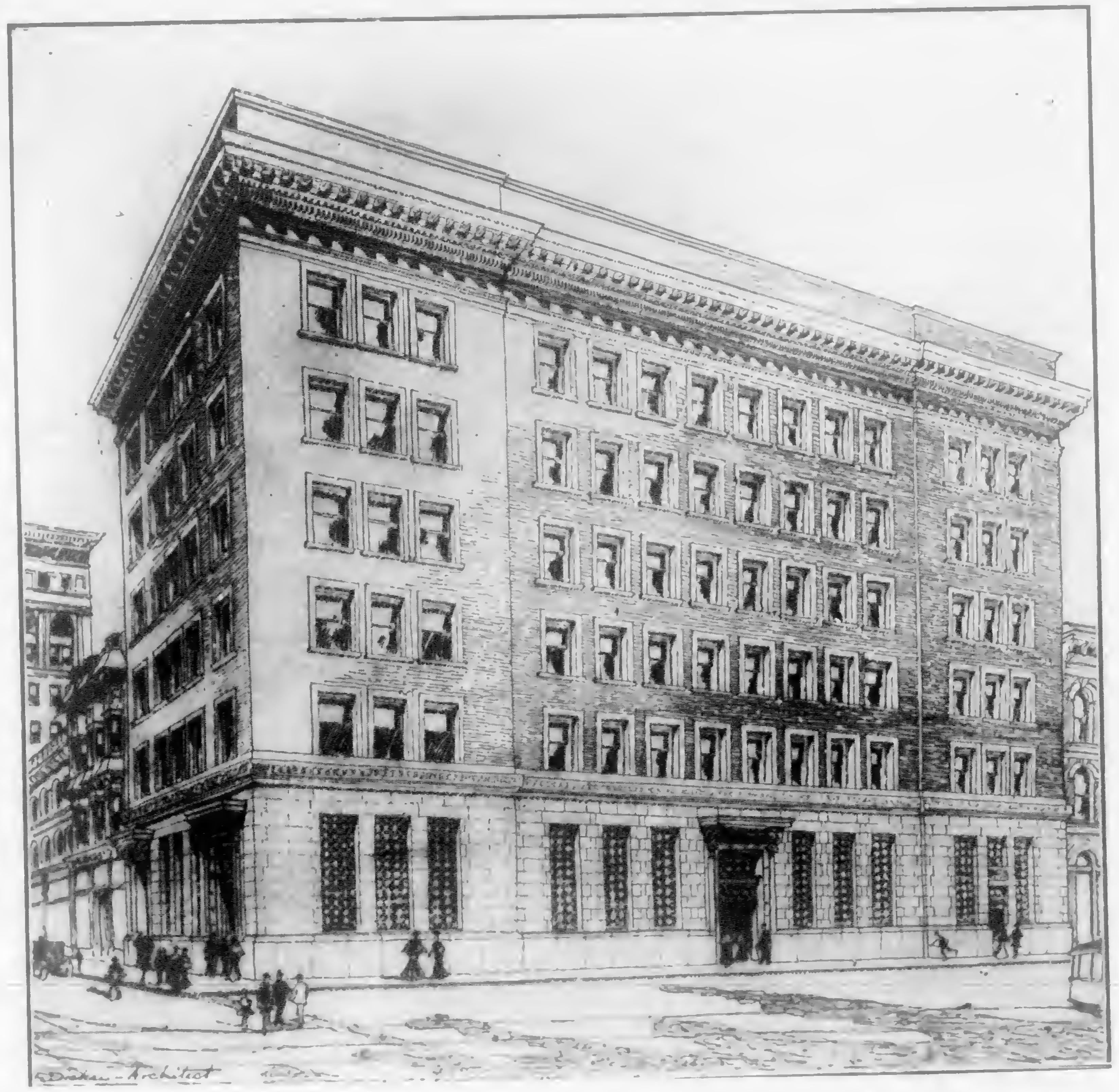

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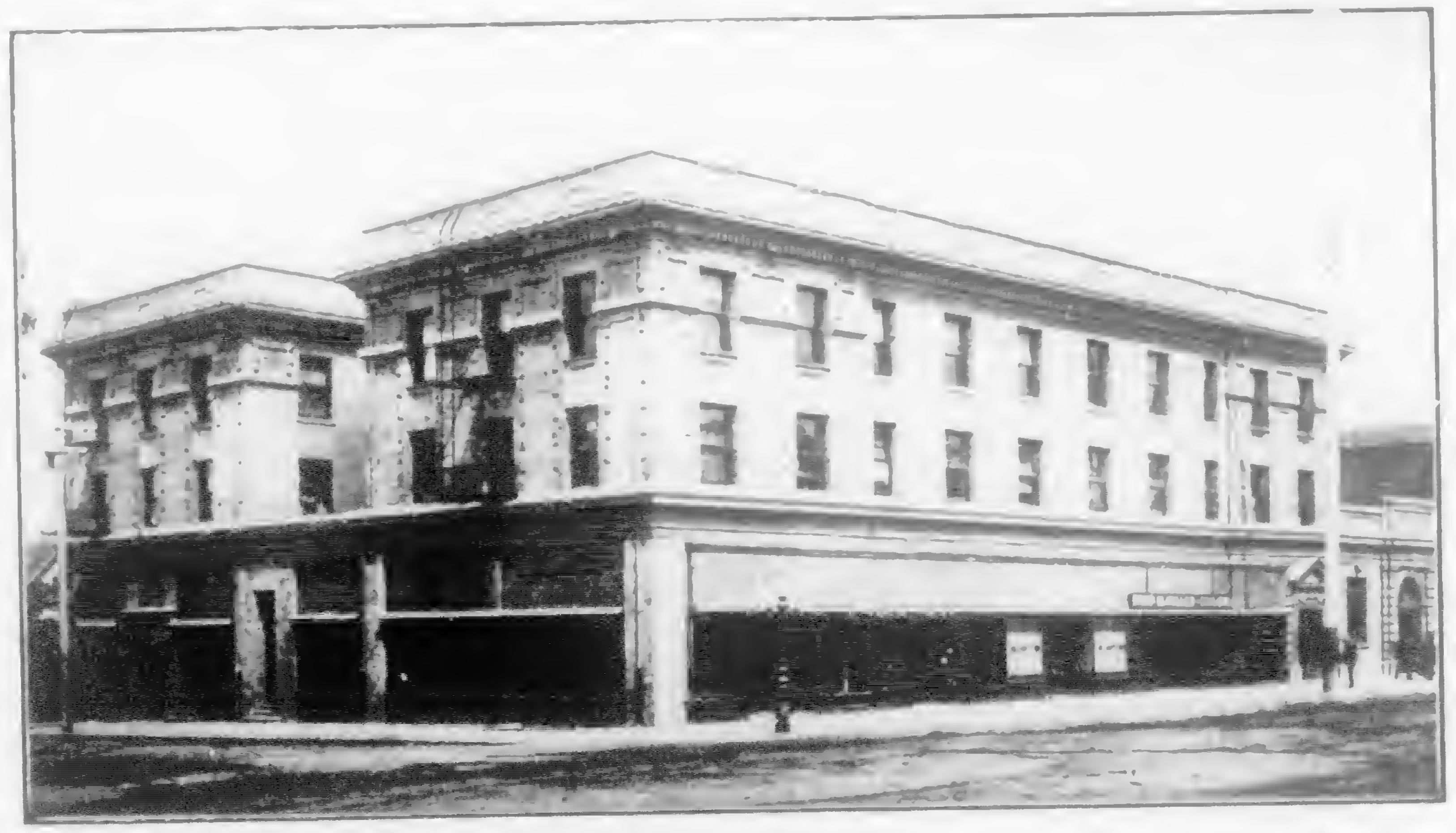
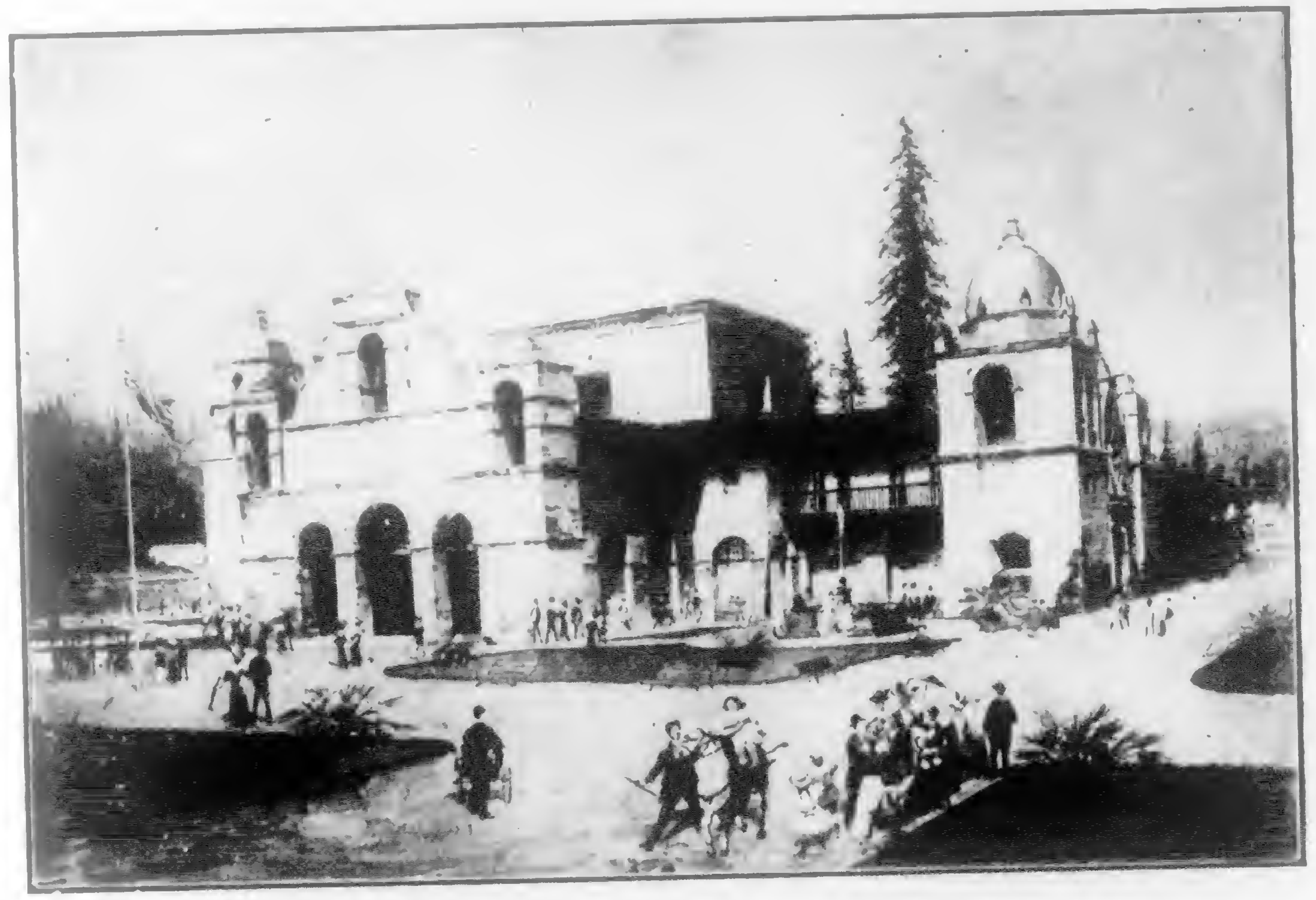
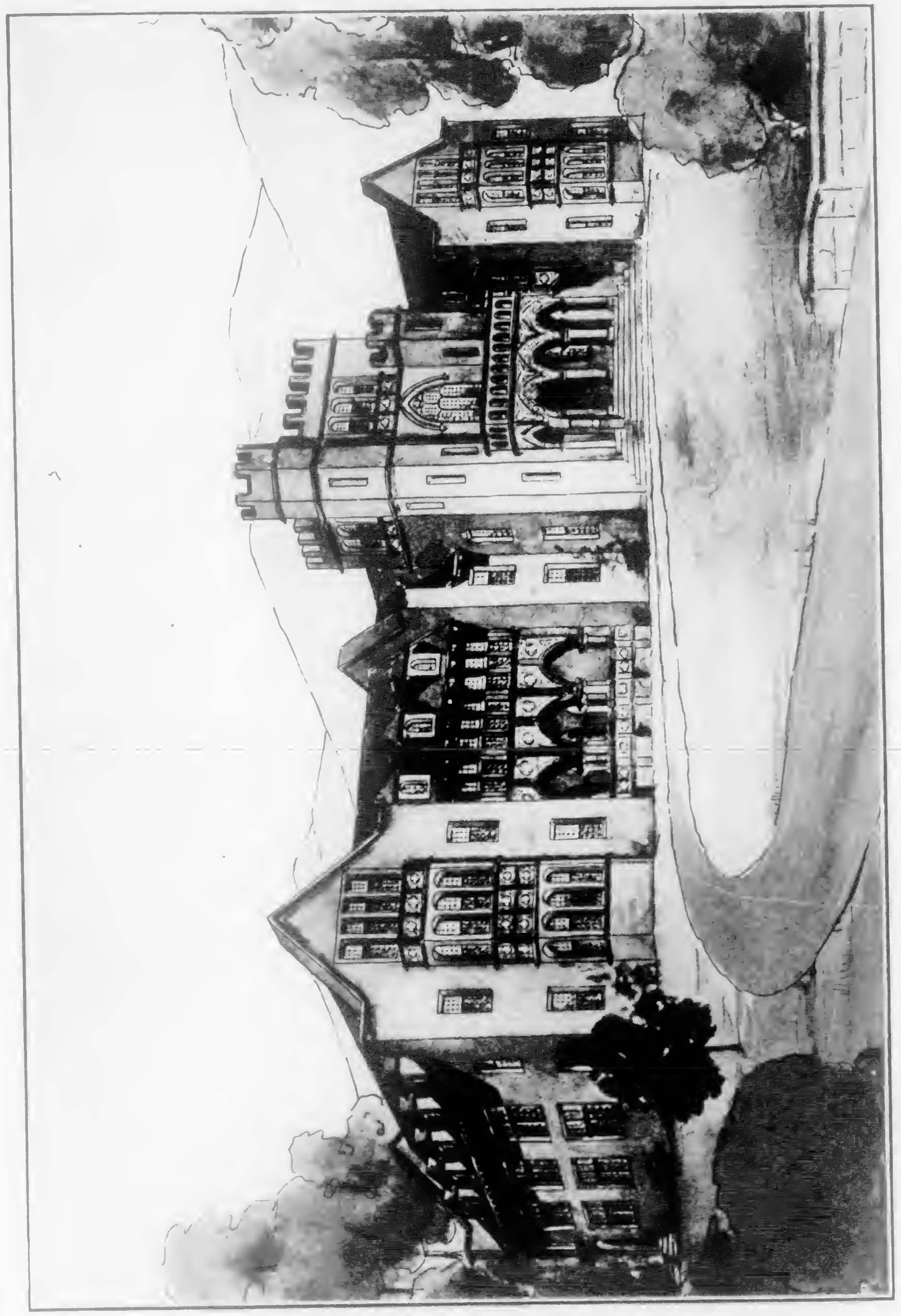


Morse Apartment House and Post Office Berkeley C. W. Dickey Architect

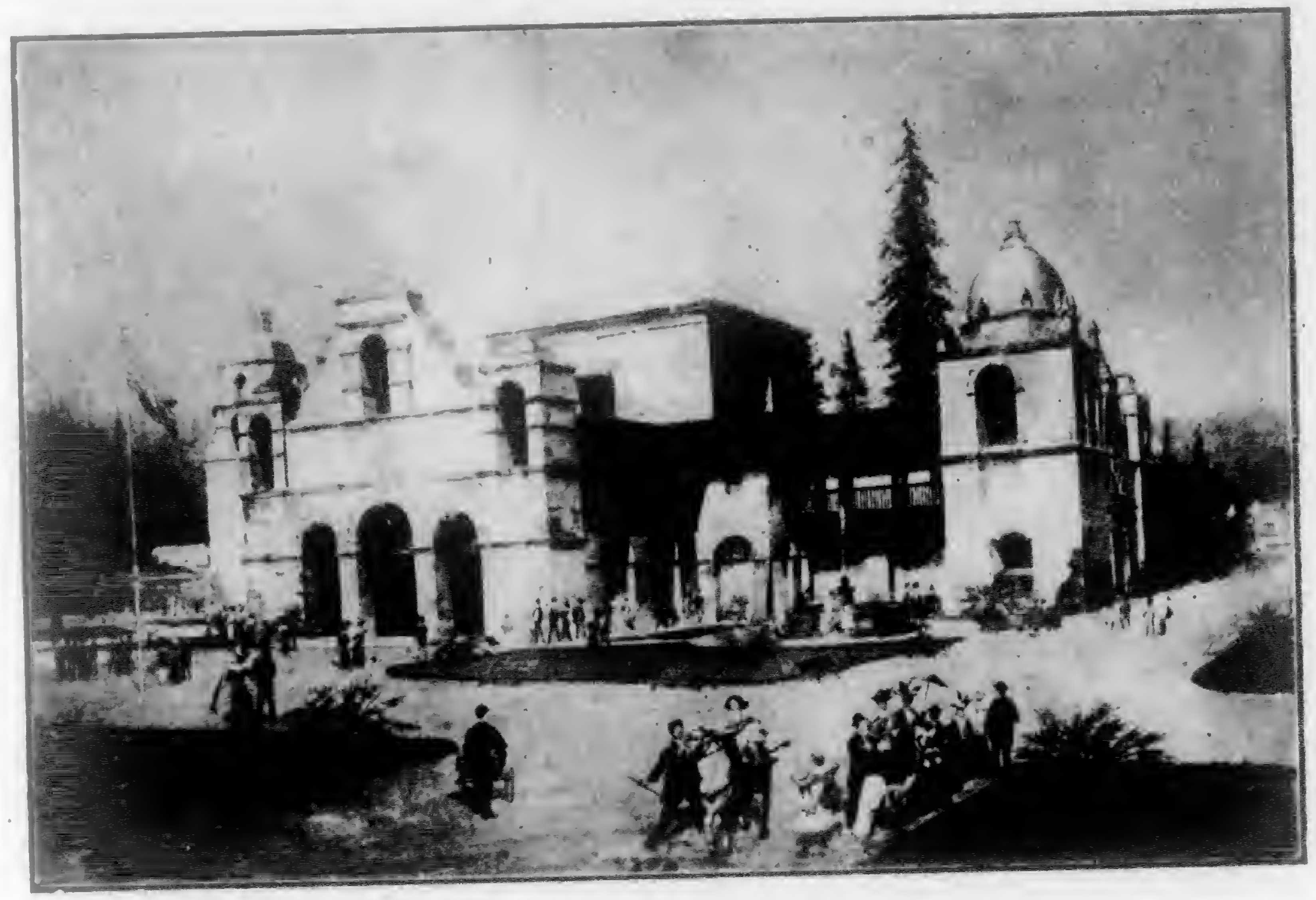


California State Building at Lewis and Clark Exposition
C. W. Dickey, Architect

West Berkeley Bank
C. W. Dickey, Architect



Sketch for a Boarding School C. W. Dickey, Architect



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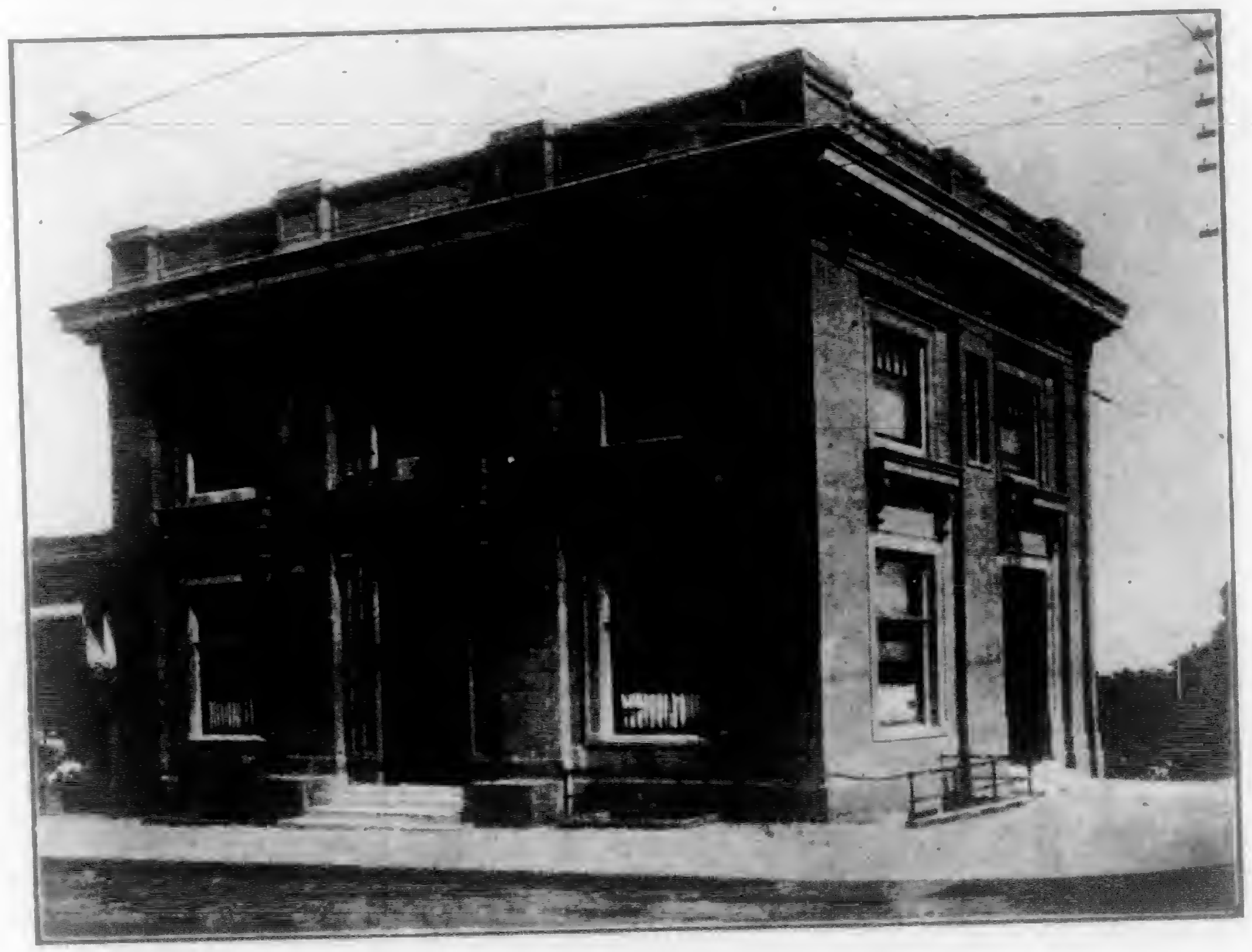

West Berkeley Bank
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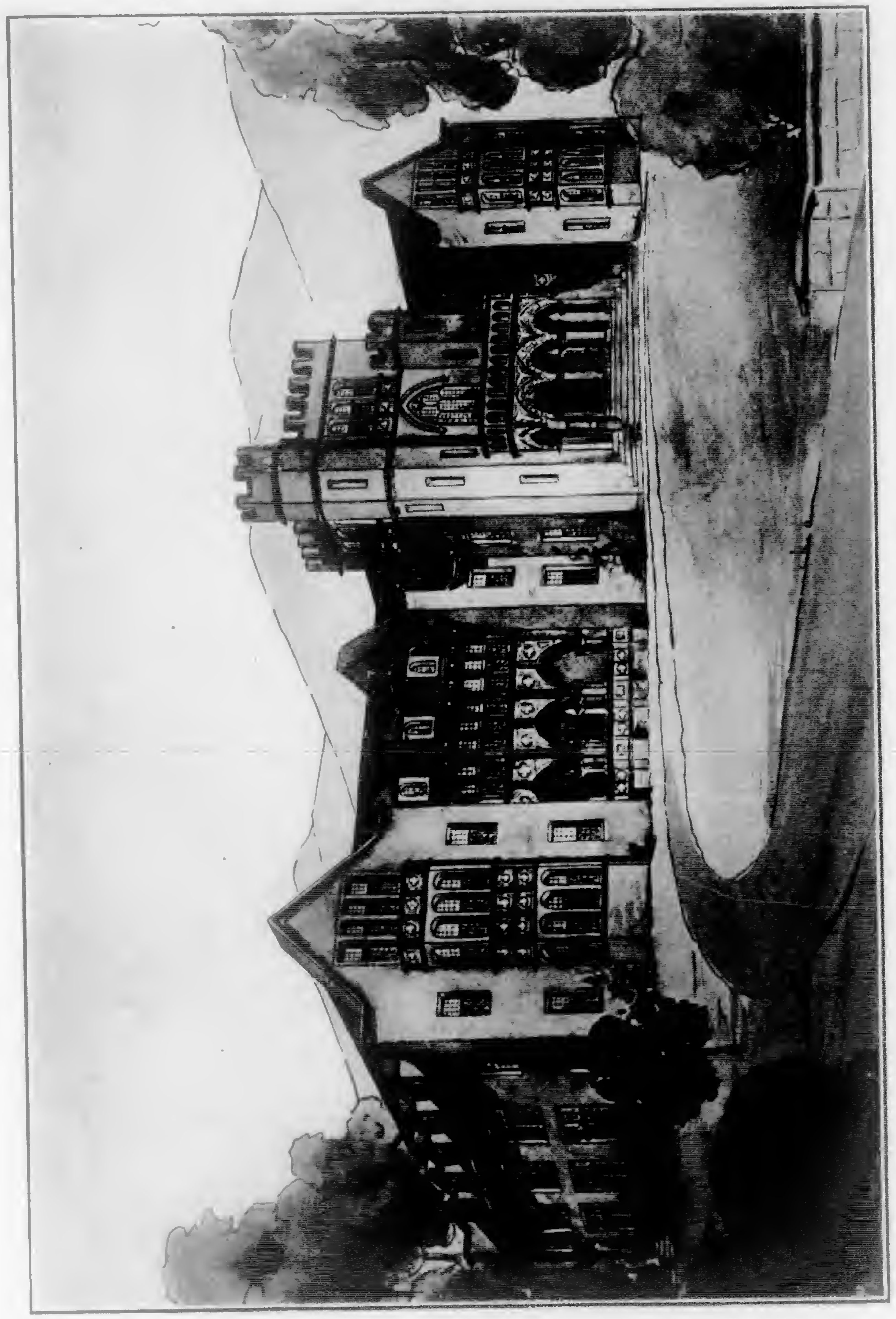
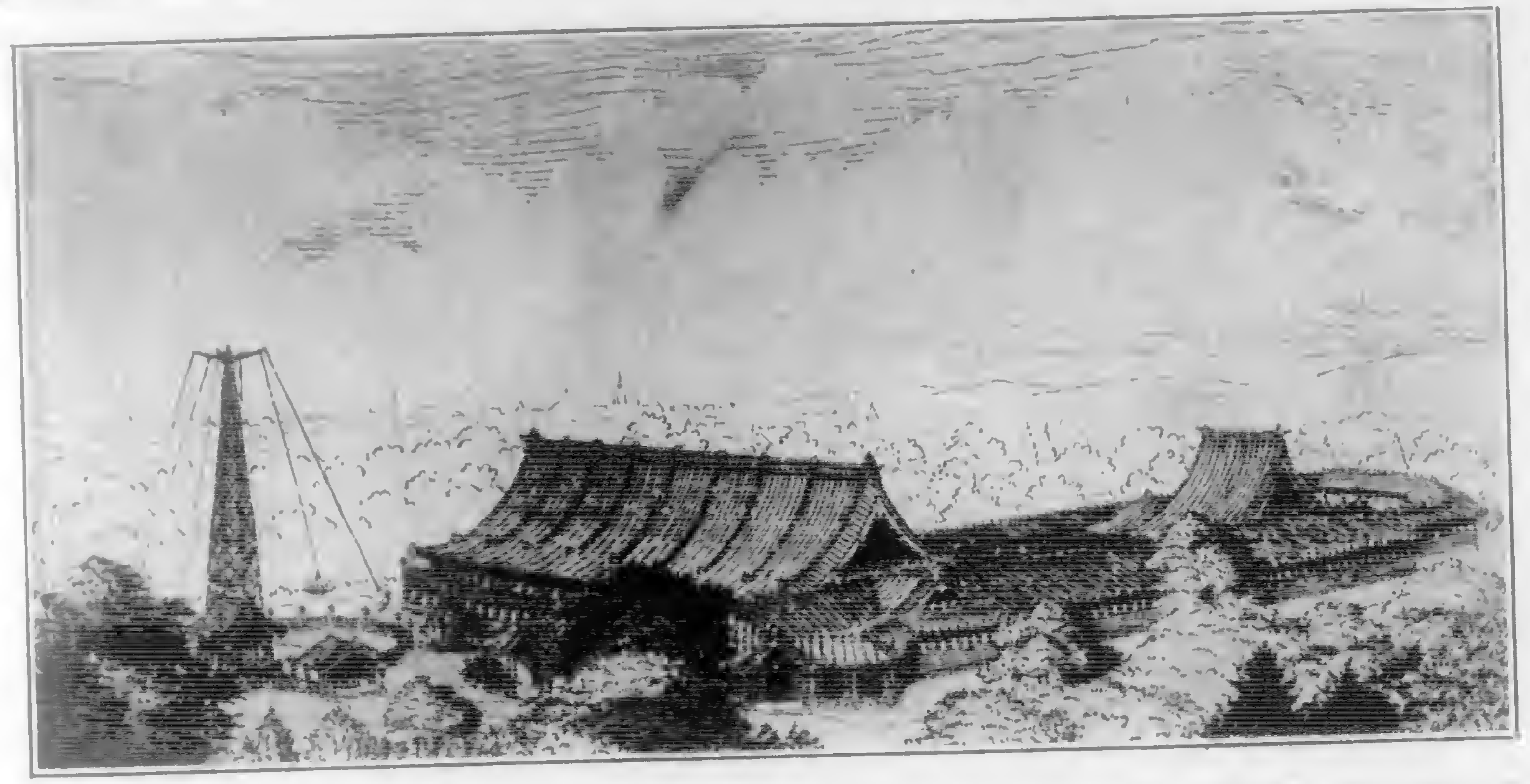
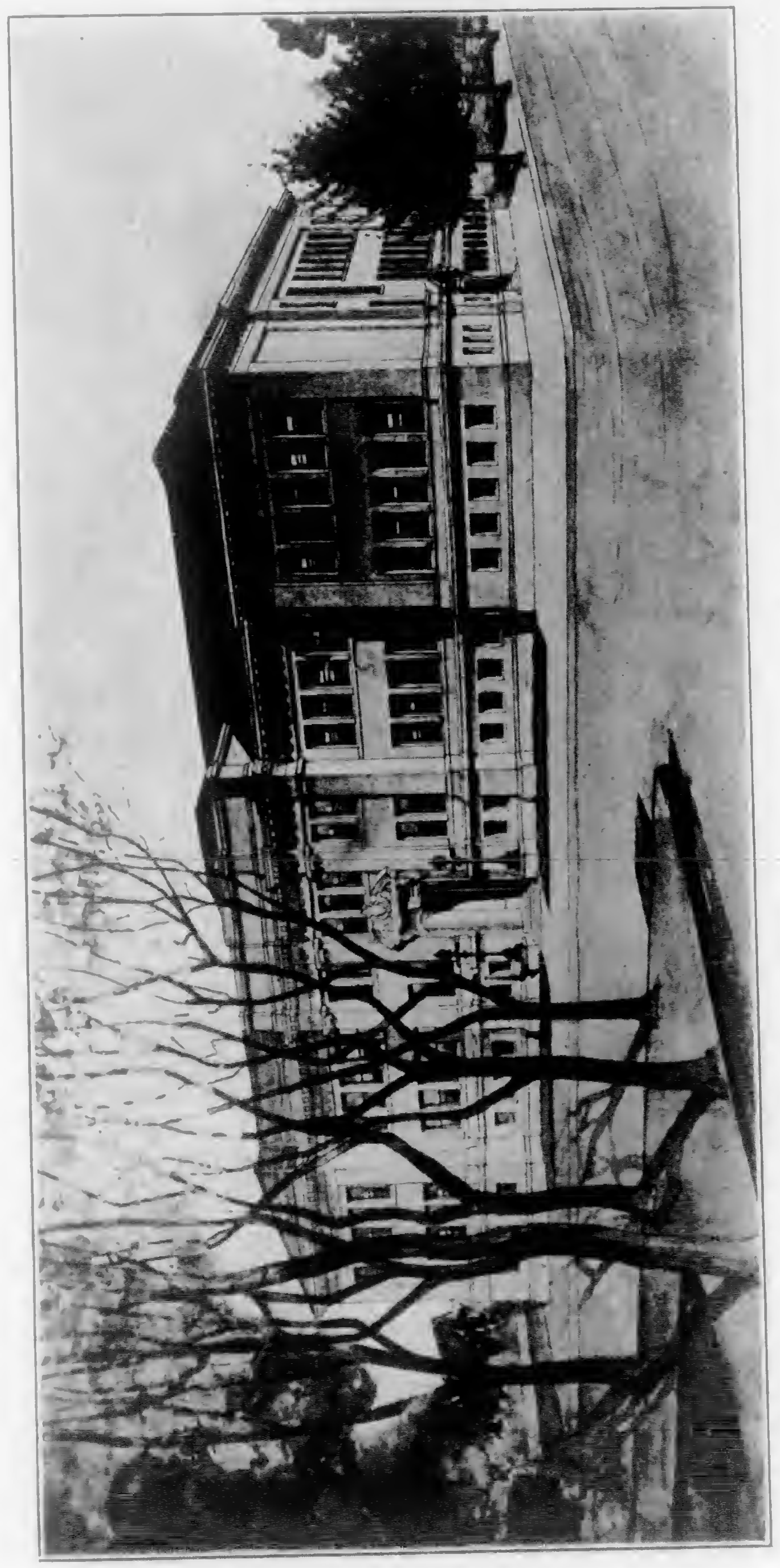


Sketch for a Boarding School — C. W. Dickey, Architect

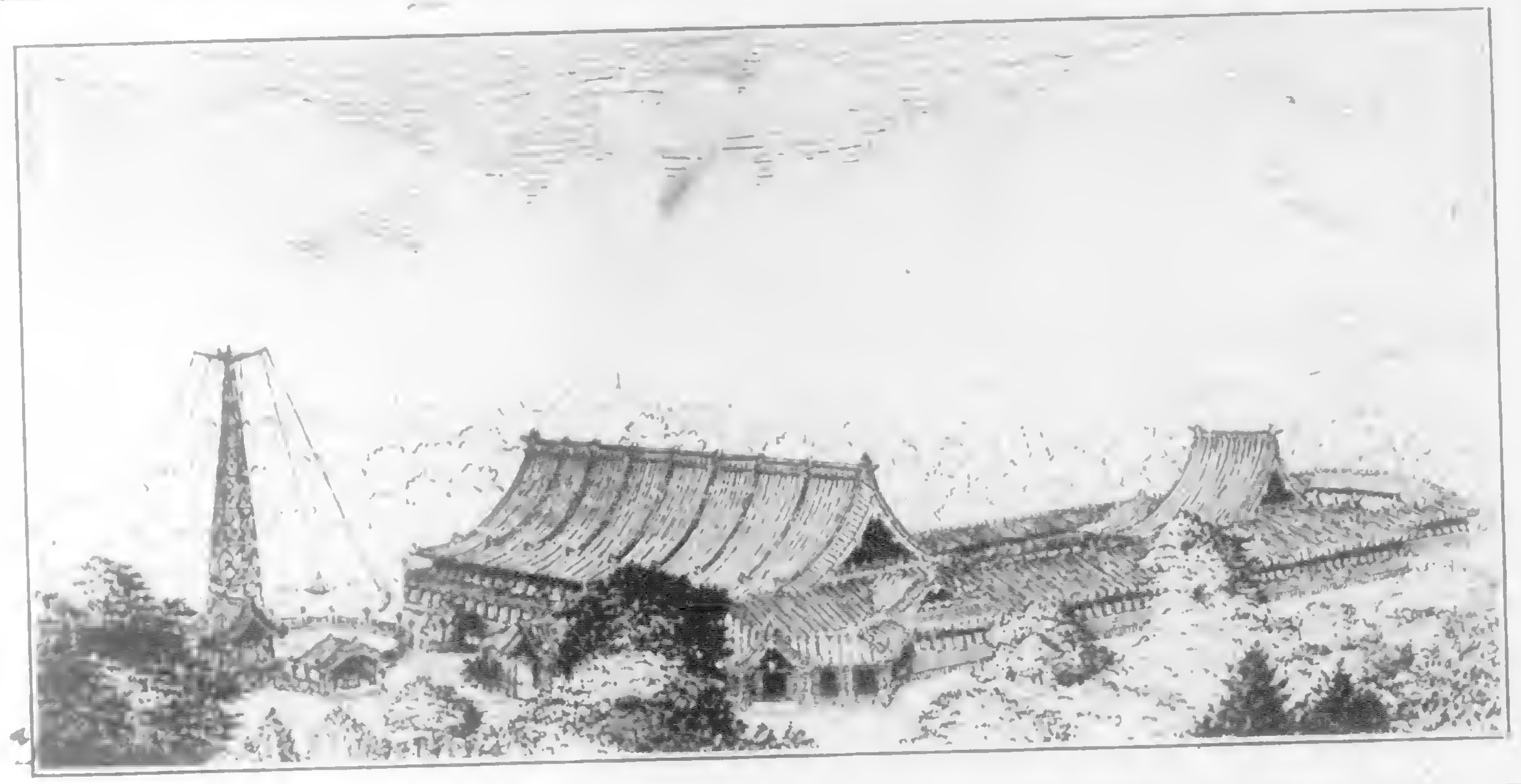


Bird's-Eye View of Idora Park Skating Rink, Oakland
C. W. Dickey, Architect

Entrance Idora Park Skating Rink



Market Street School, Oakland — C. W. Dickey, Architect



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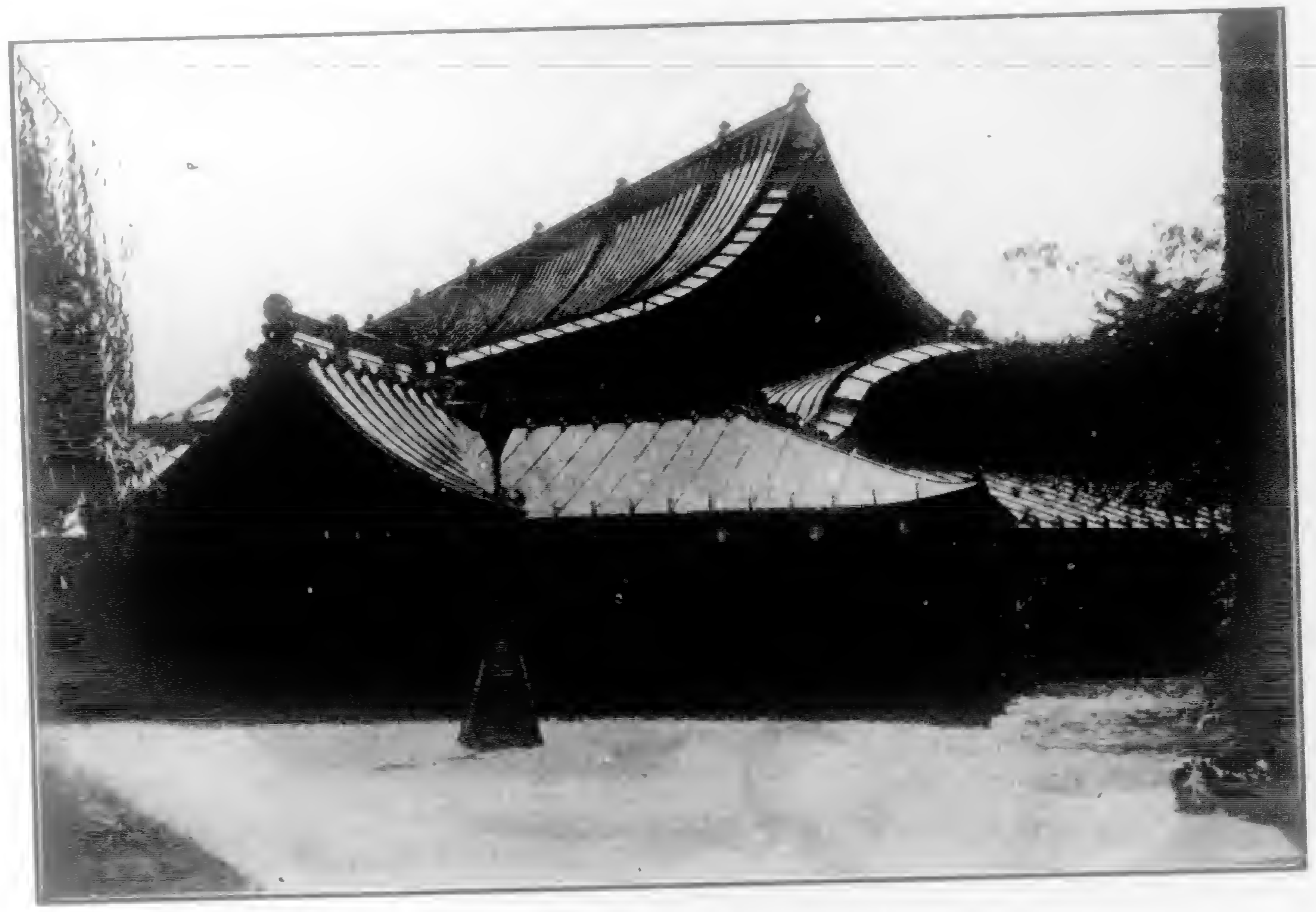
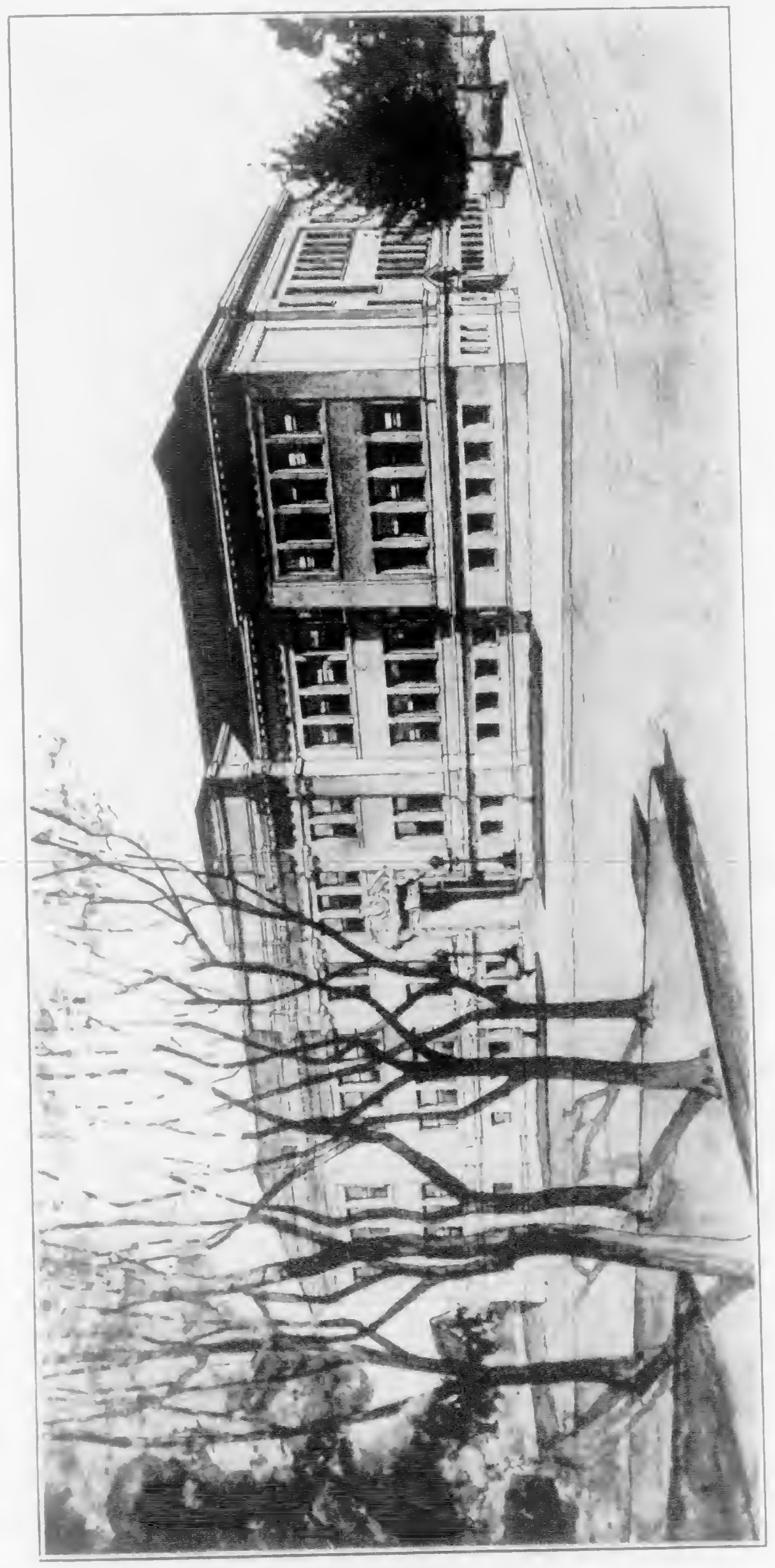
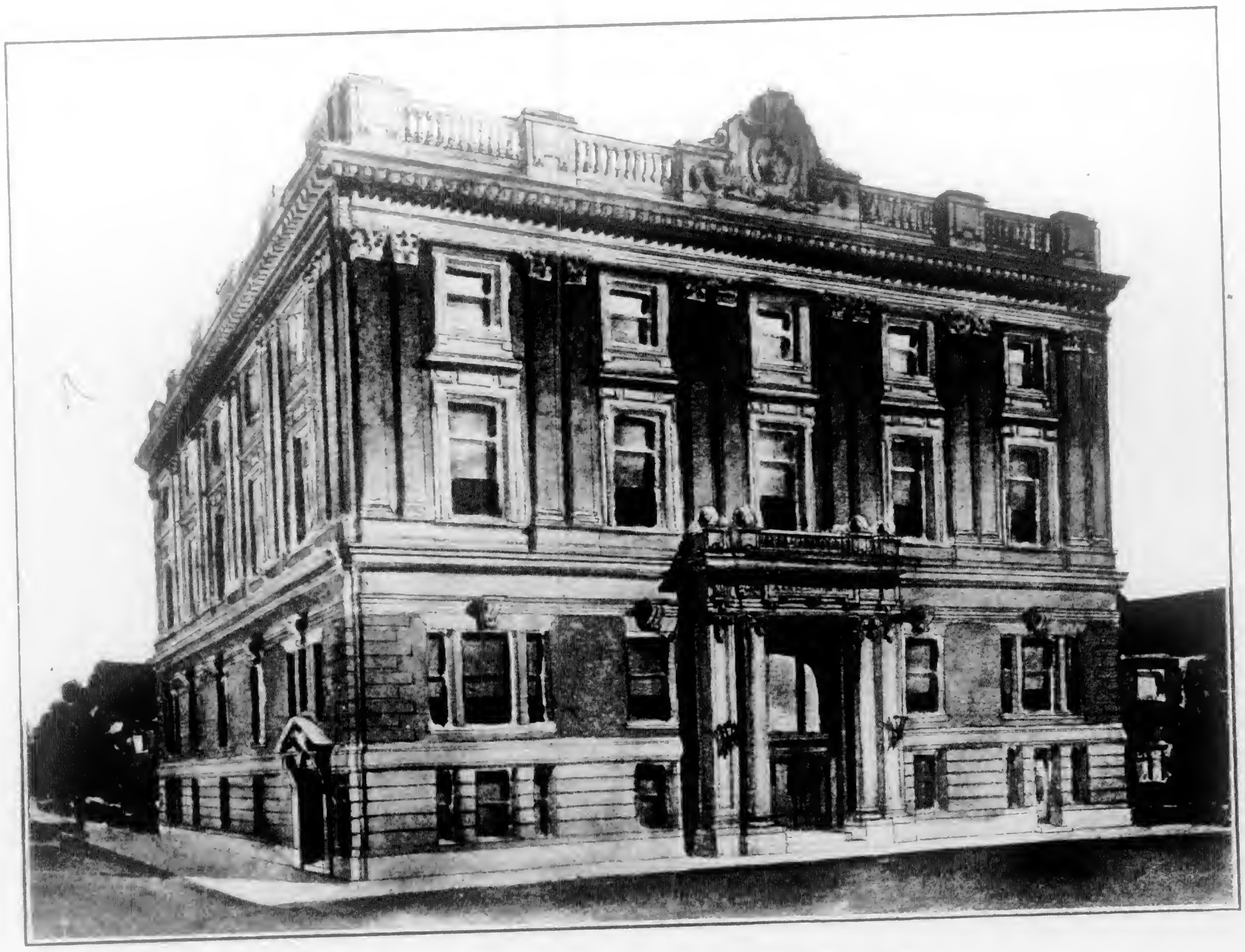


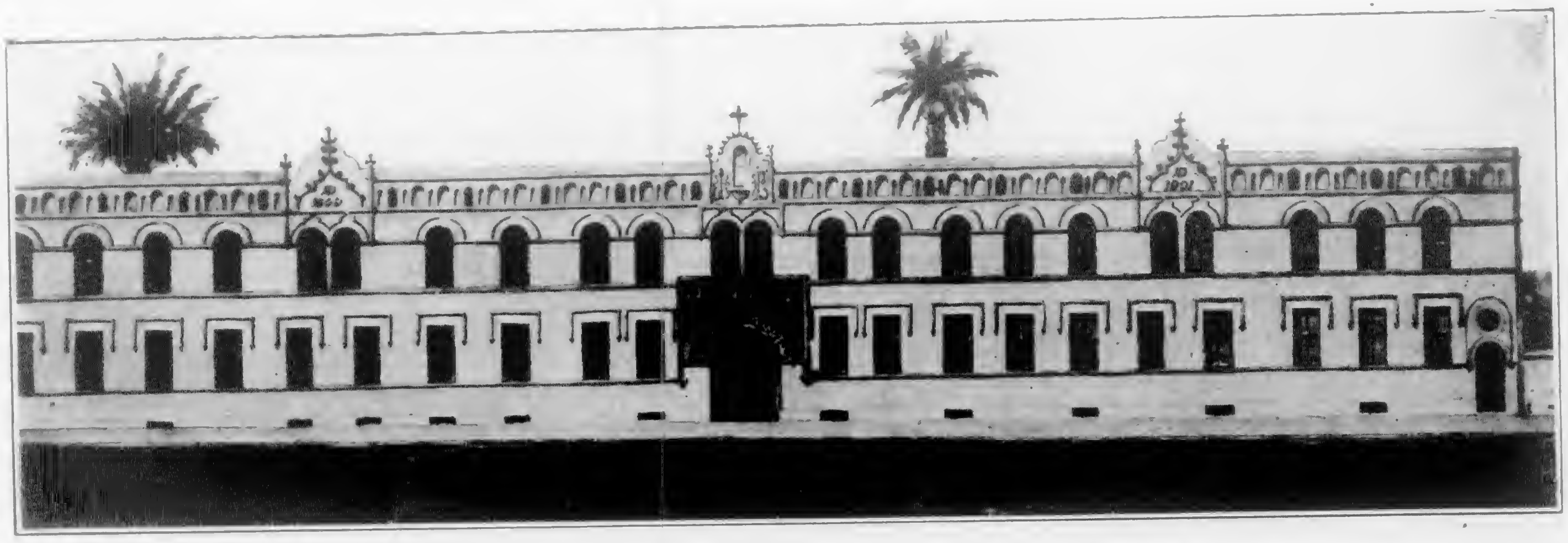
Entrance Idora Park Skating Rink



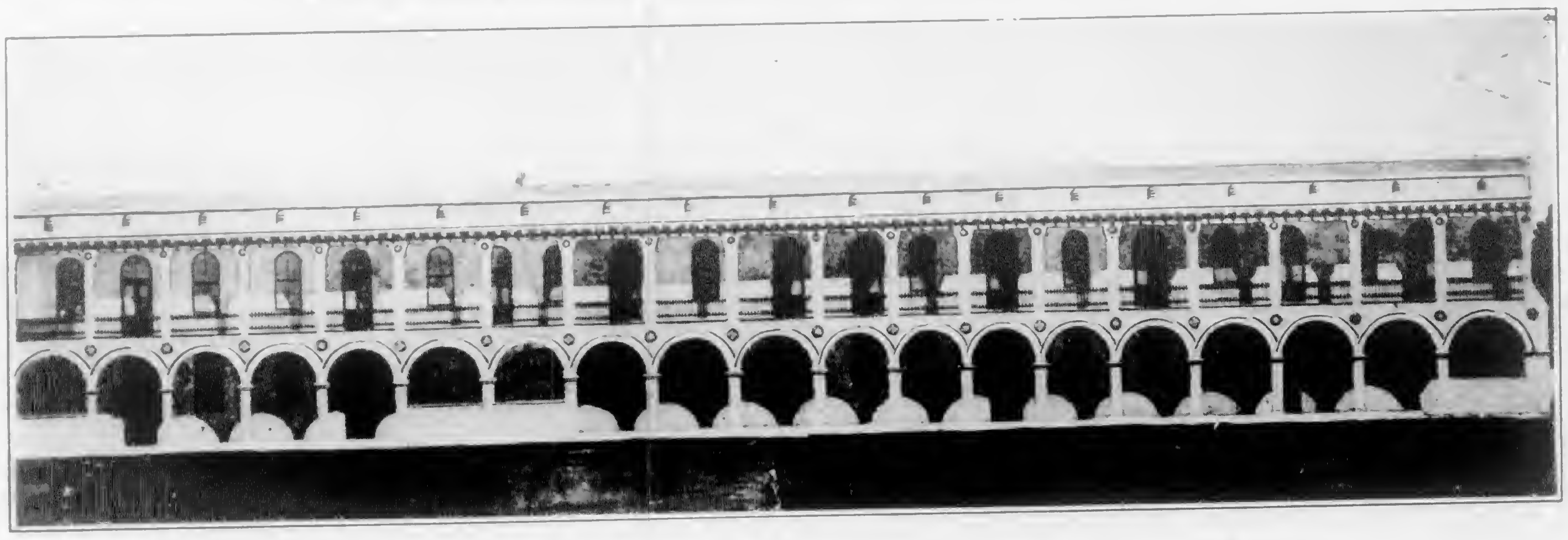
Market Street School, Oakland—C. W. Dickey, Architect



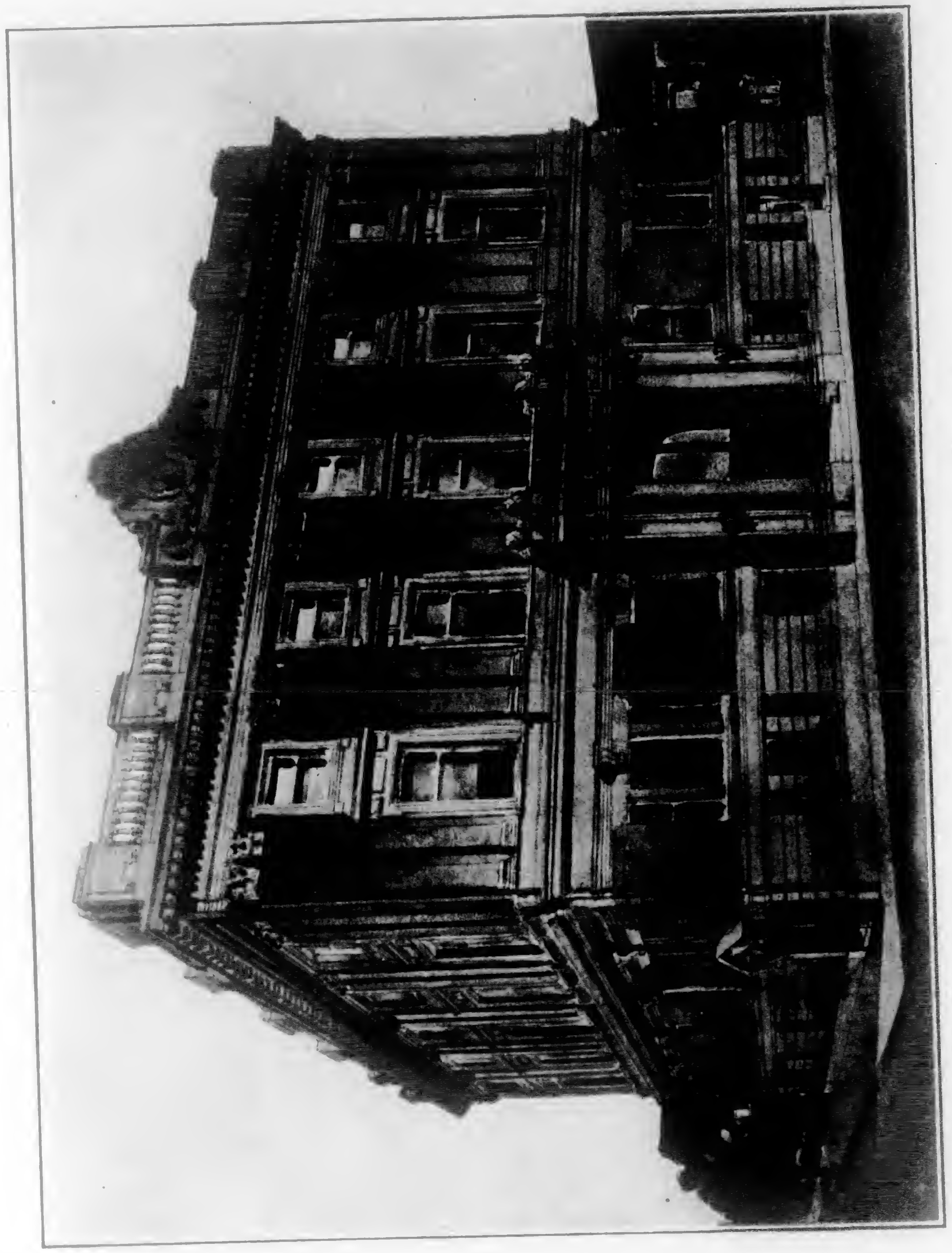
Store for S. [illegible] Kress [illegible], Oakland — C. W. Dickey, Architect



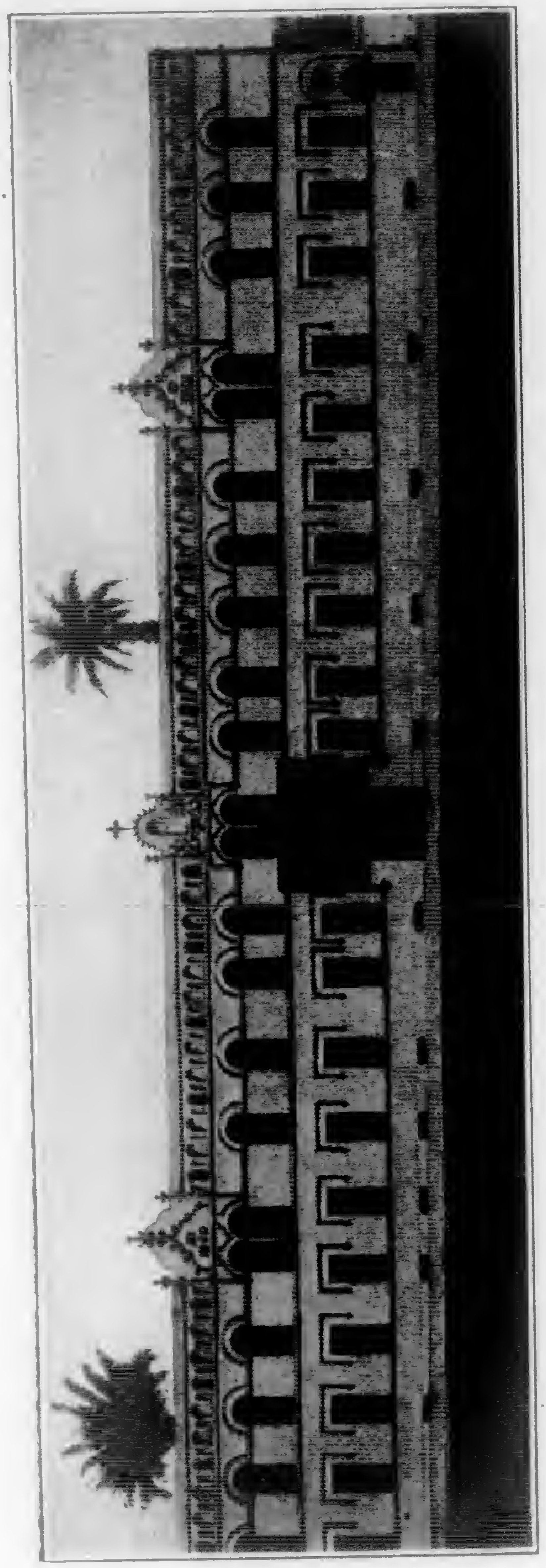
School for Convent of the Sacred Heart, Honolulu (Fort Street Front) C. W. Dickey, Architect



School for Convent of the Sacred Heart, Honolulu (Cloister Front)



Study for Scottish Rite Cathedral, Oakland. — C. W. Dickey, Architect



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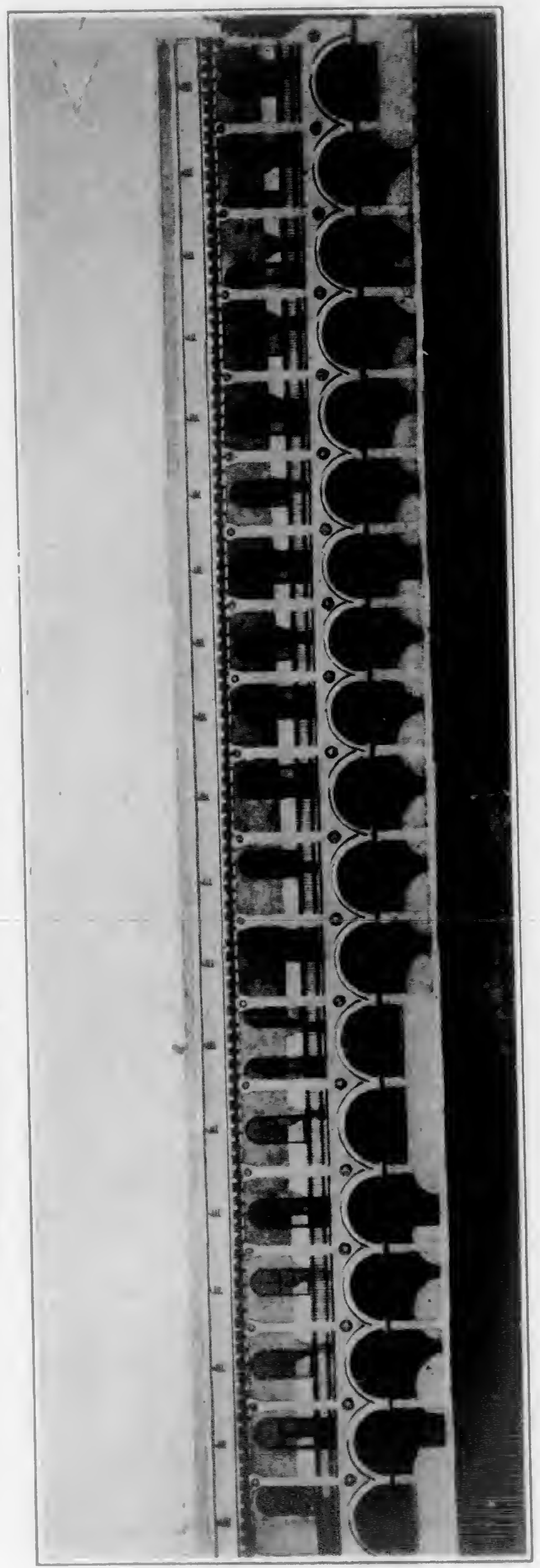
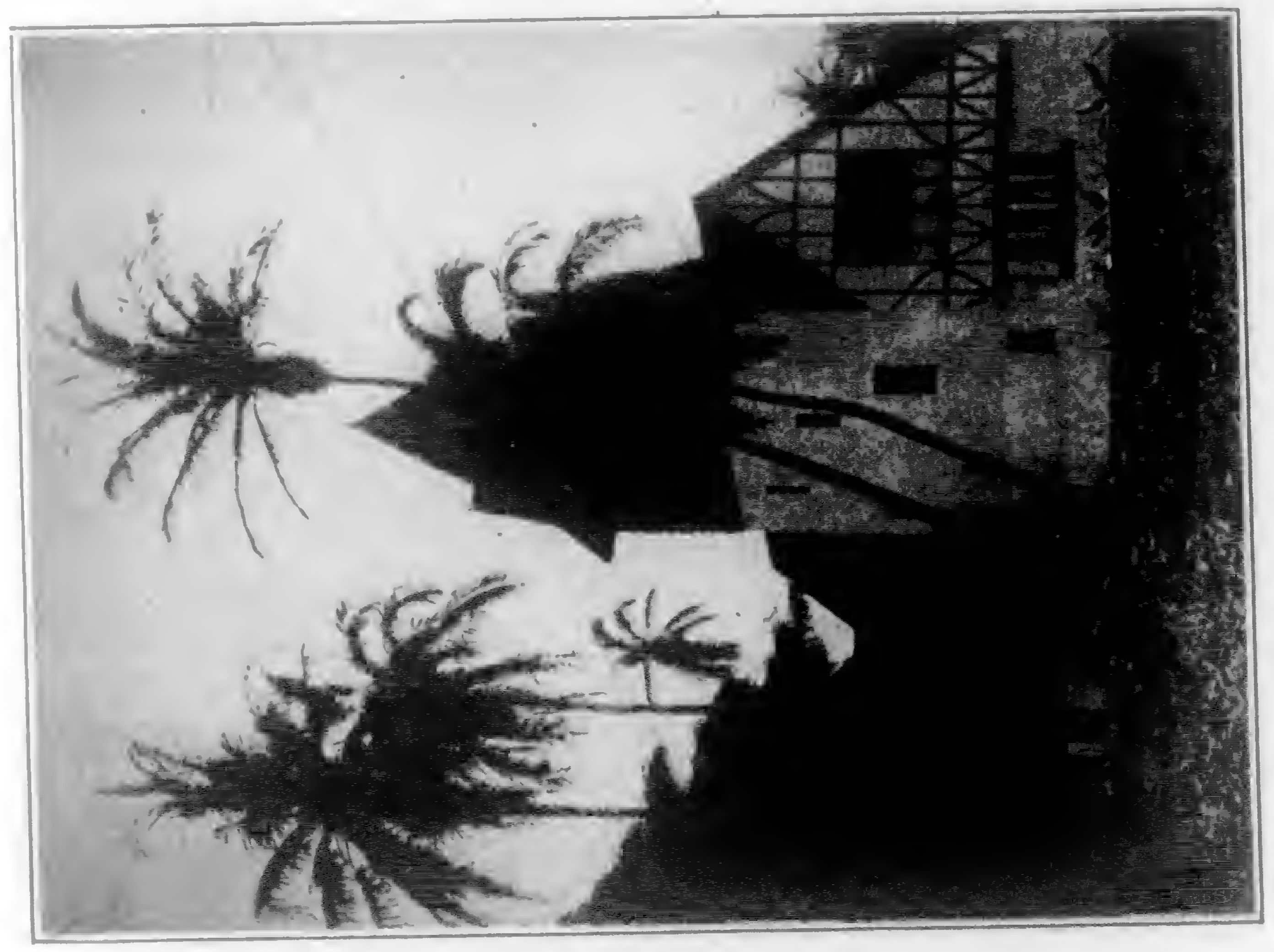
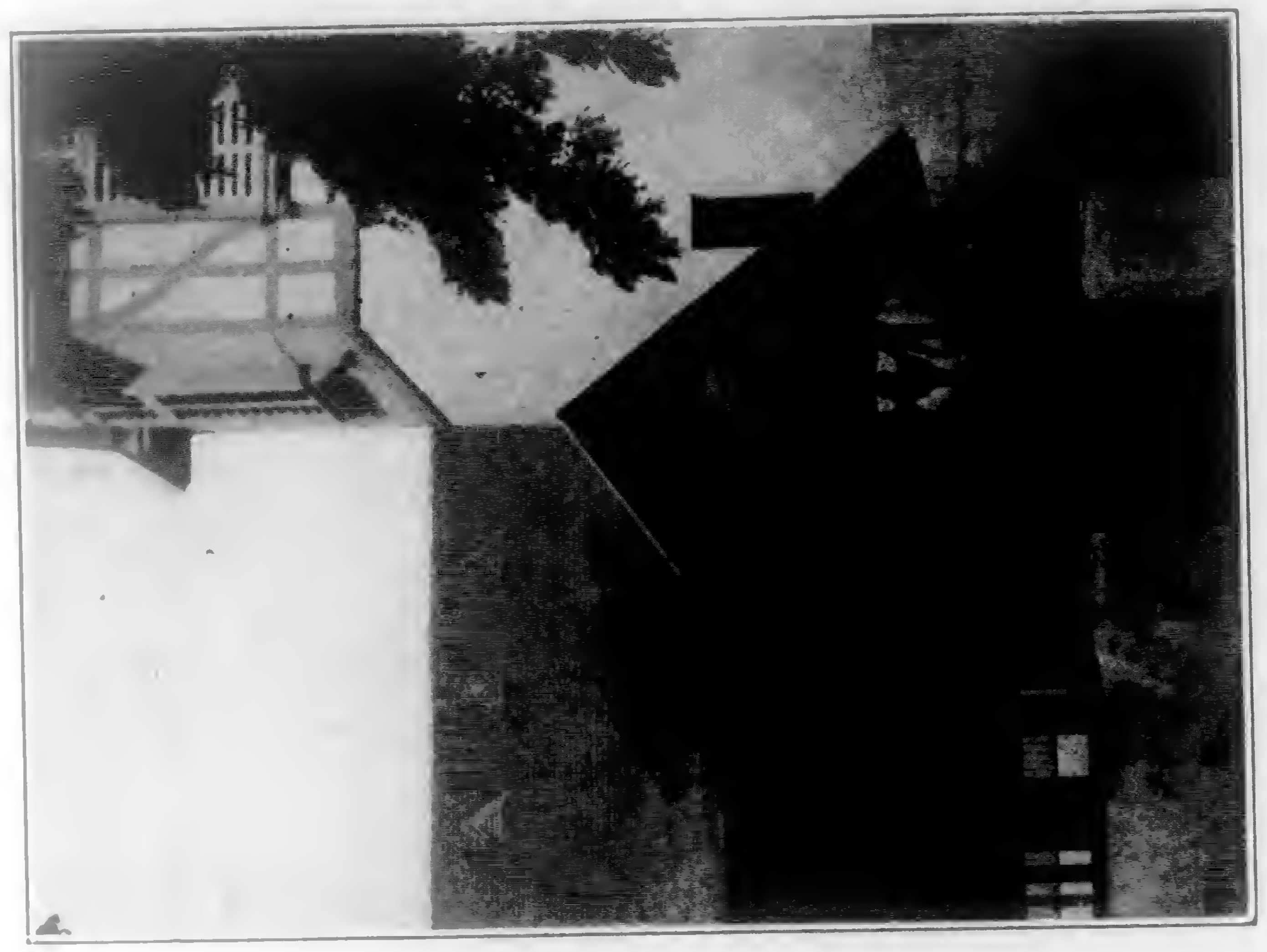


School for Convent of the Sacred Heart, Honolulu (Cloister Front)

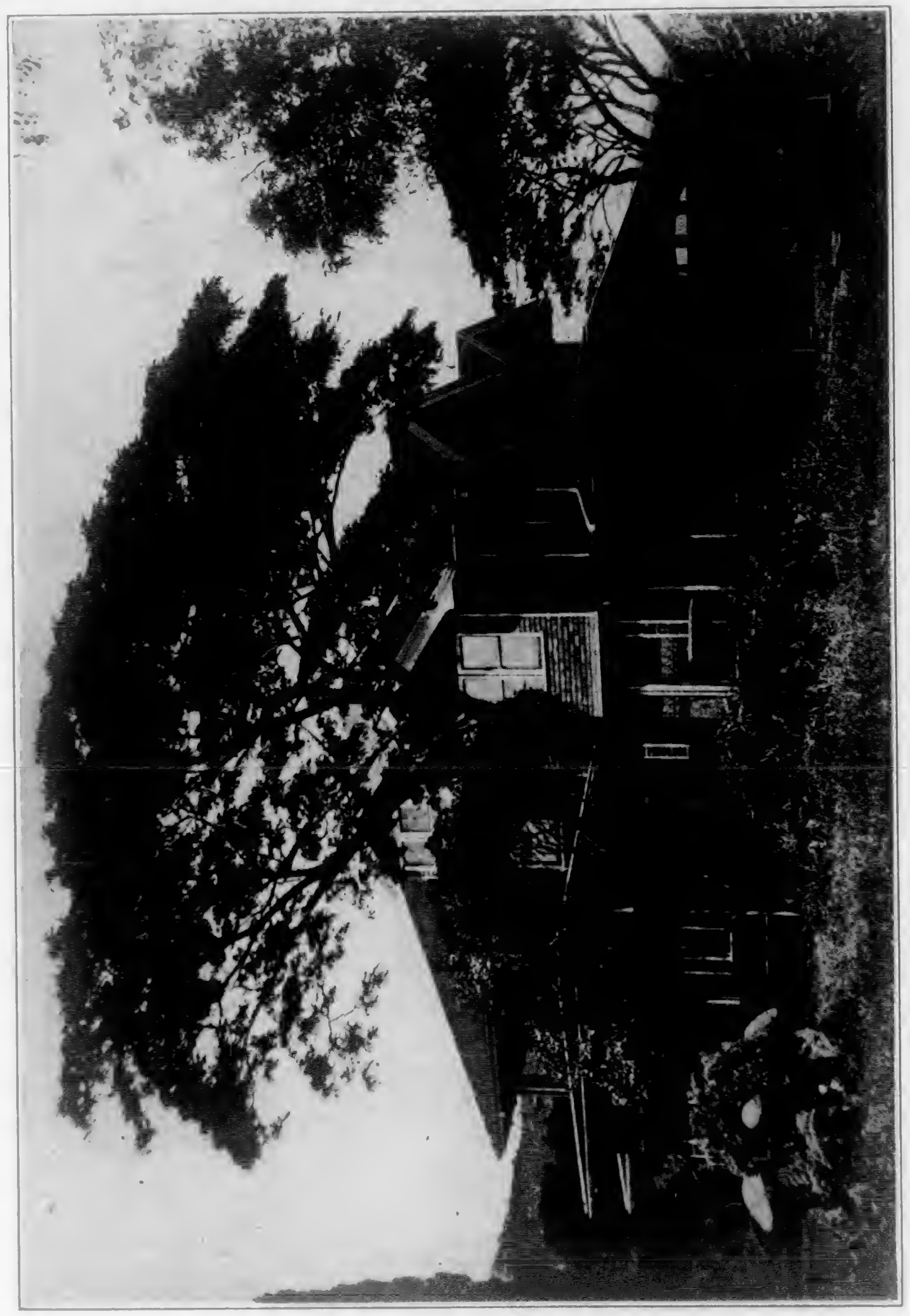


Baldwin Memorial Native Church, Lahaina, Maui

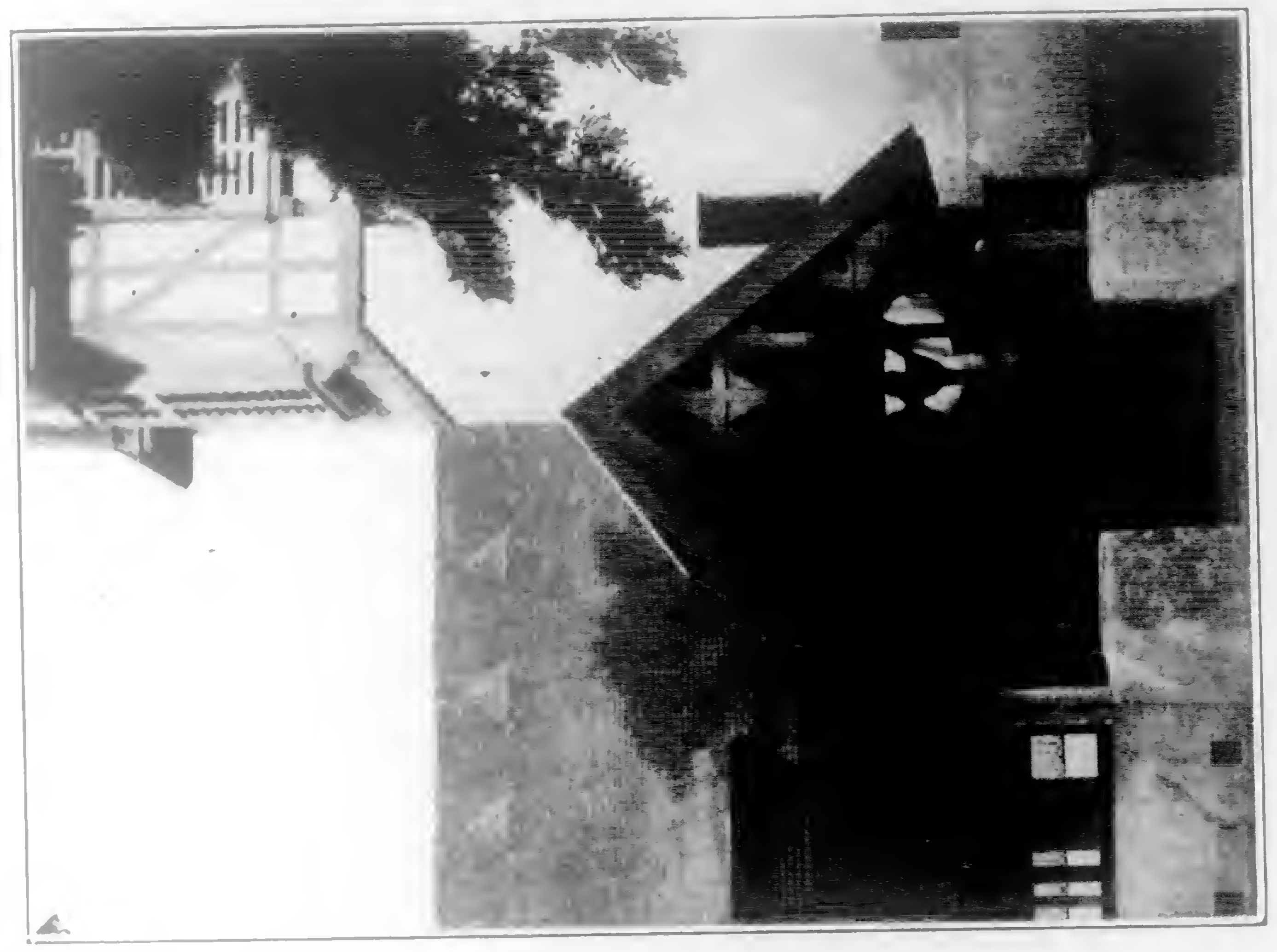
C. W. Dickey, Architect



Entrance Baldwin Memorial Native Church



Residence of Cline Davies, Honolulu. — C. W. Dickey, Architect



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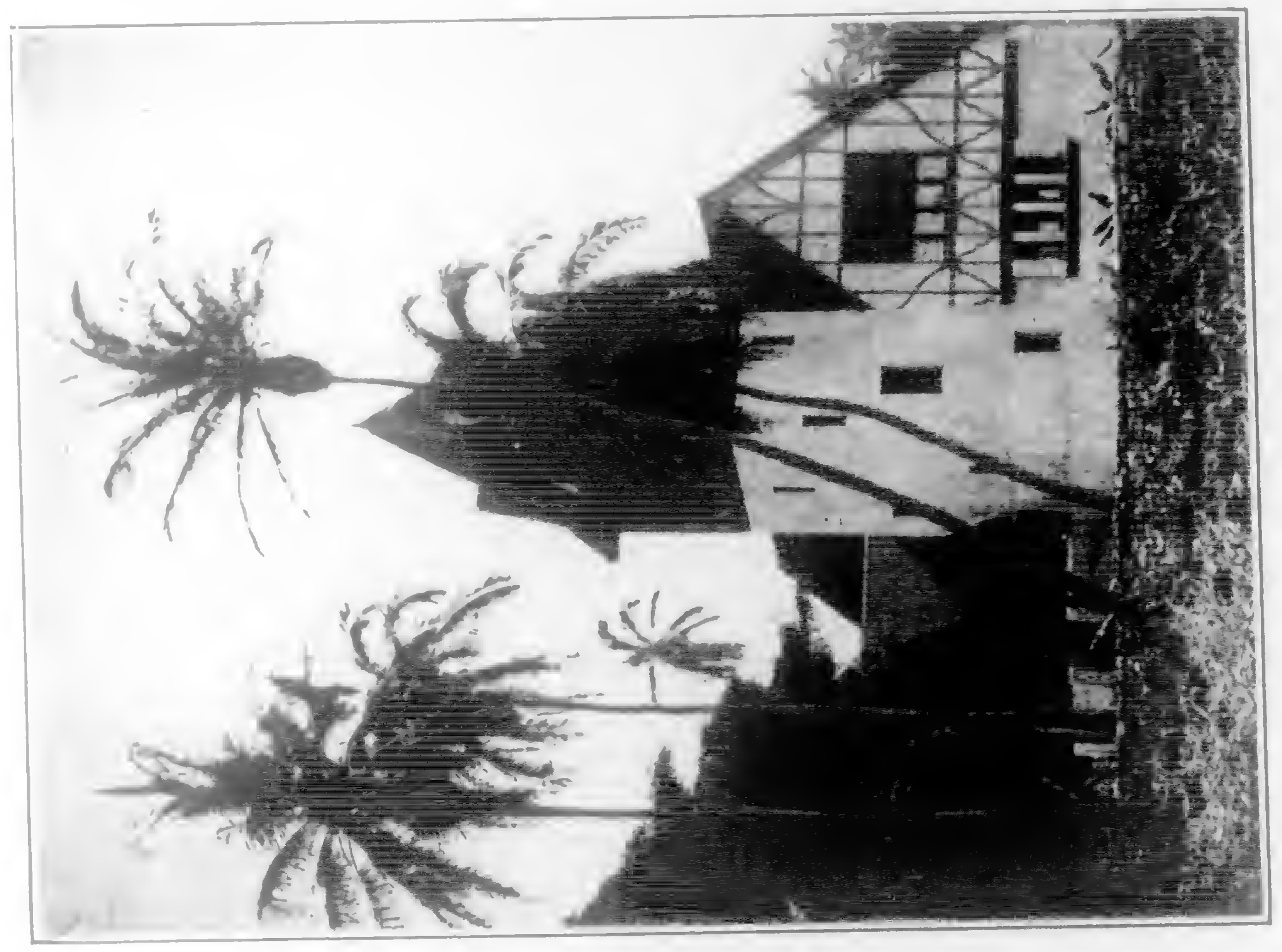
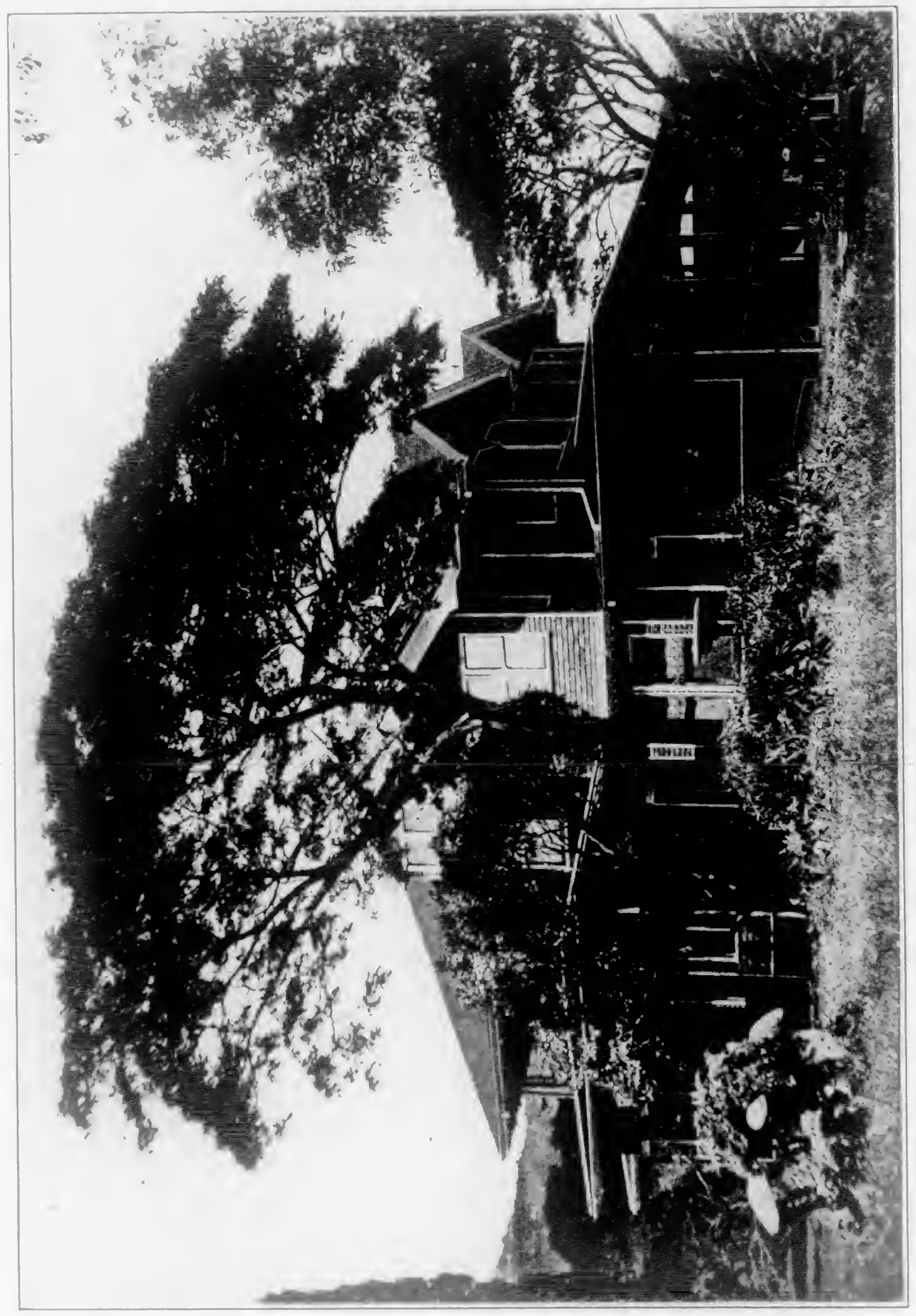
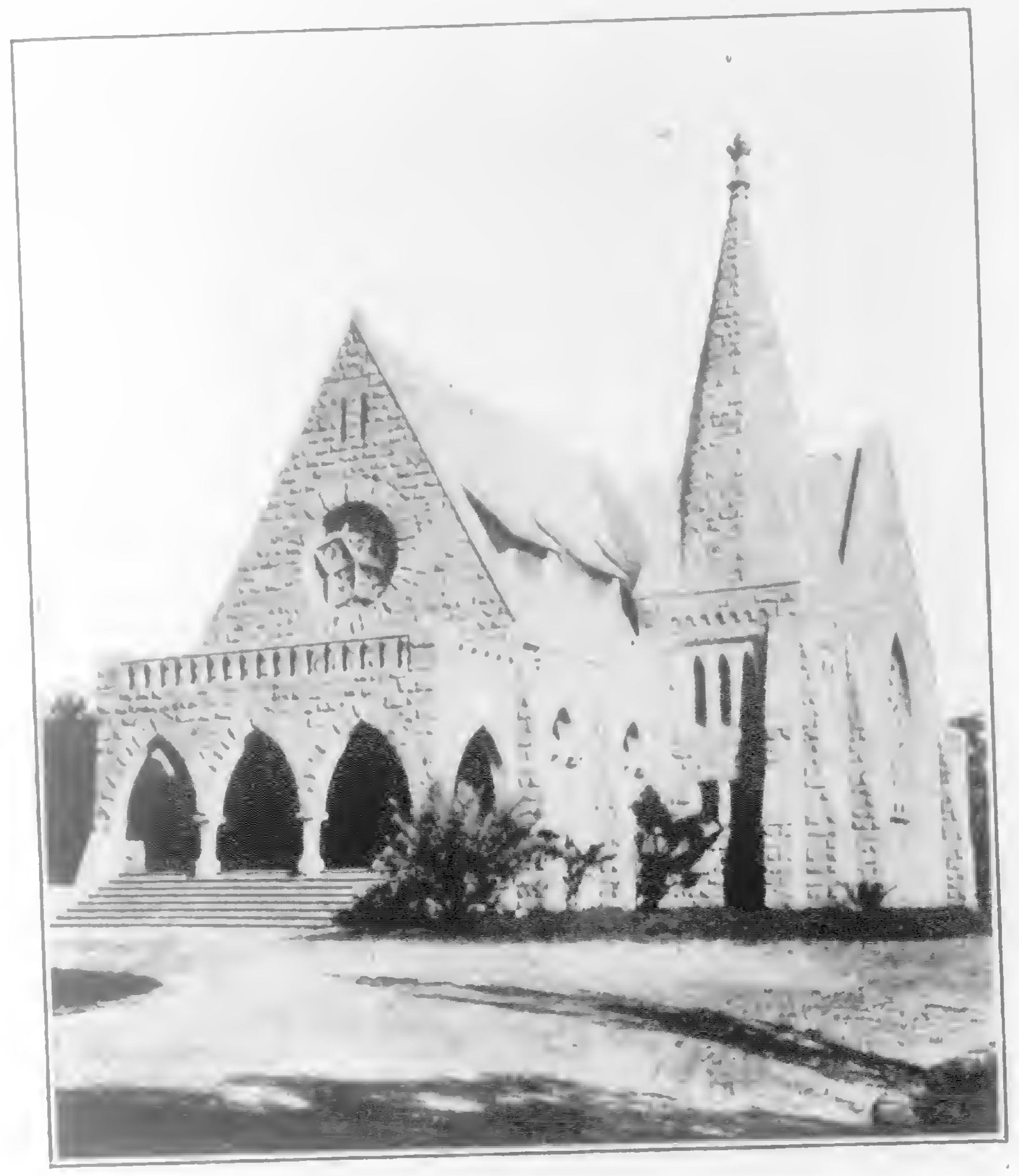


Baldwin Memorial Native Church, Lahaina, Maui

C. W. Dickey, Architect



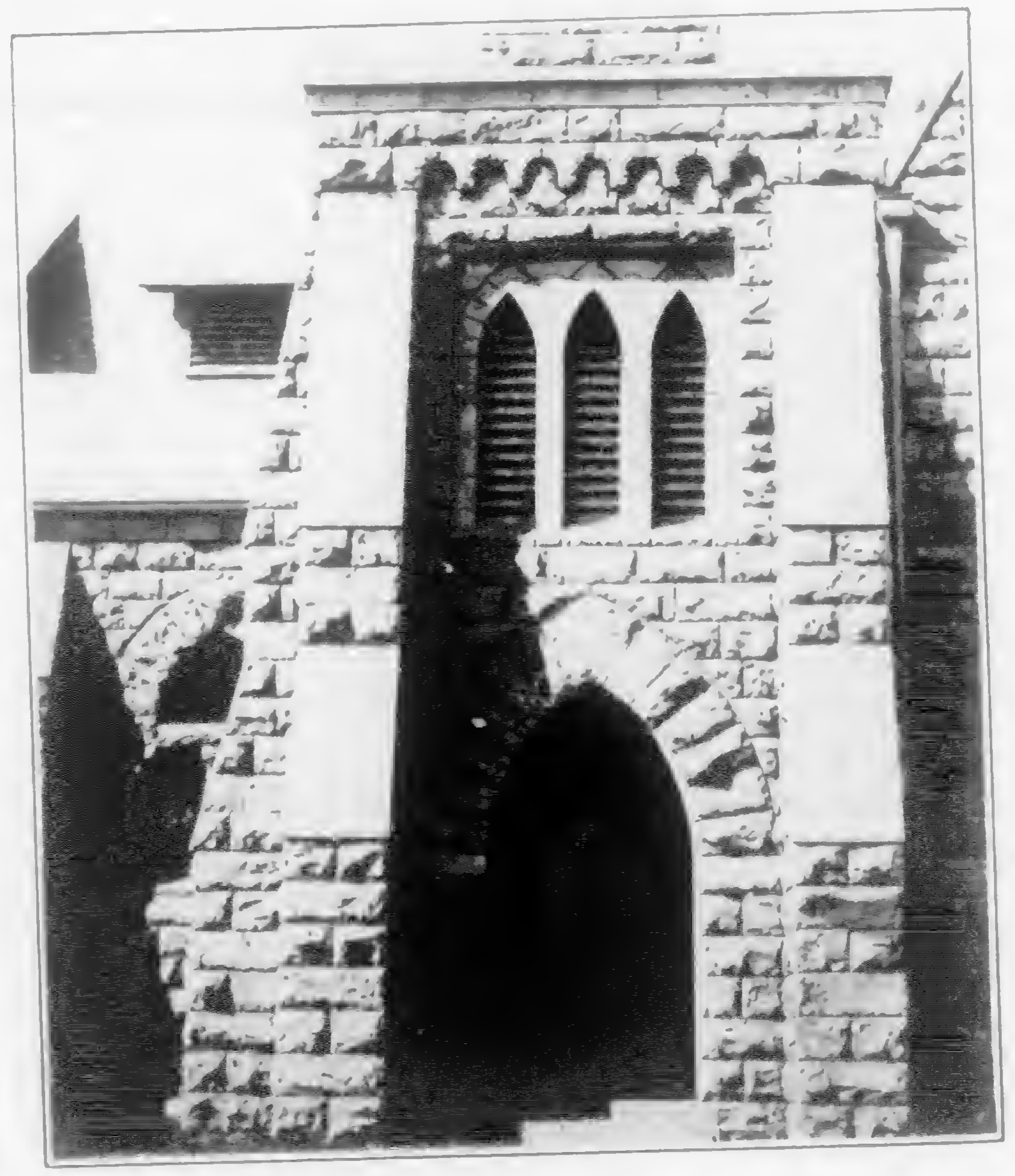
Residence of Clive Davies, Honolulu   C. W. Dickey, Architect

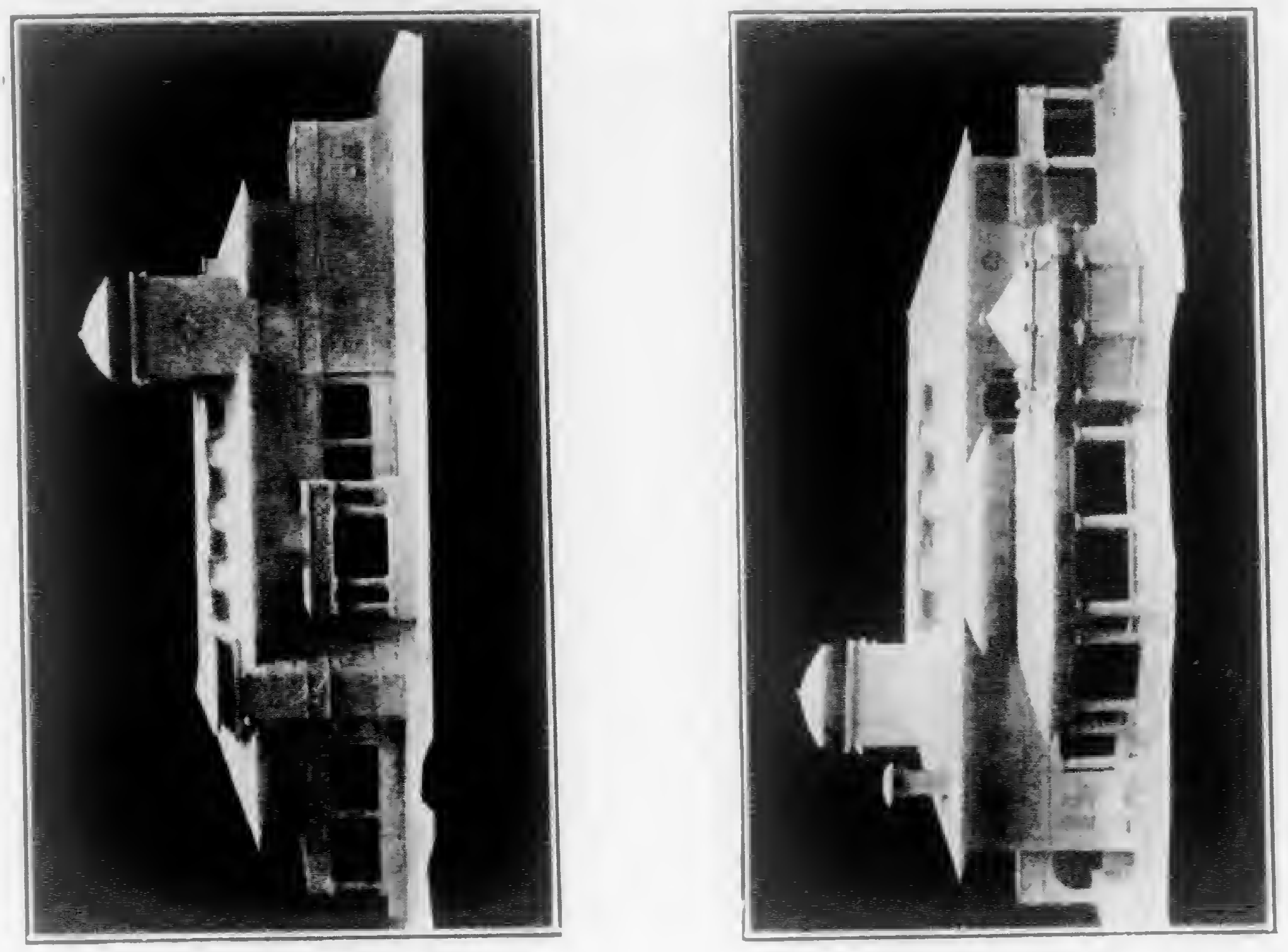


BISHOP
MEMORIAL
CHAPEL,
Honolulu.

C. W. DICKEY,
Architect

Entrance
of
BISHOP
MEMORIAL
CHAPEL

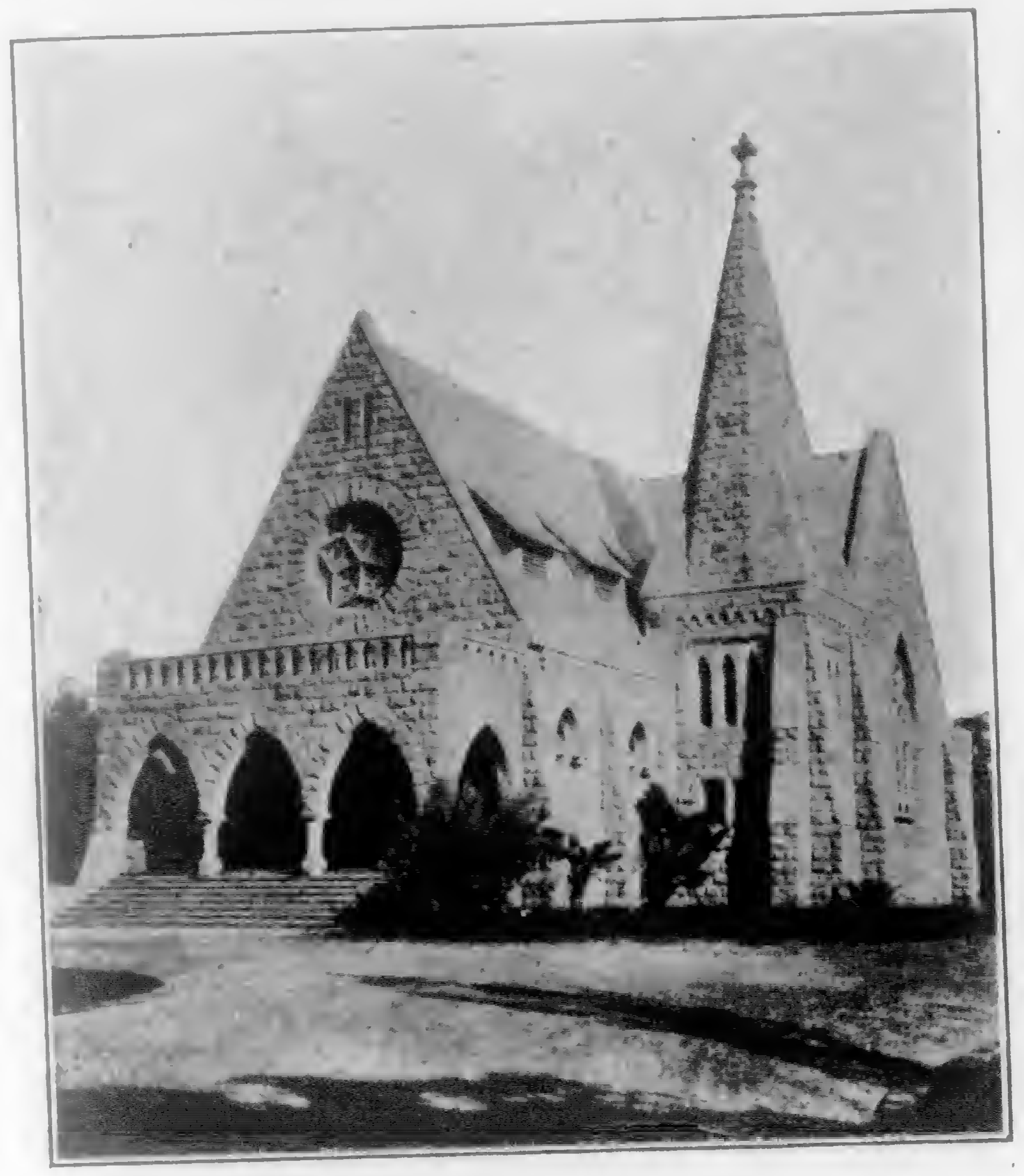




Plaster Models of the Residence of William S. Irwin, Honolulu

C. H. Dickey, Architect

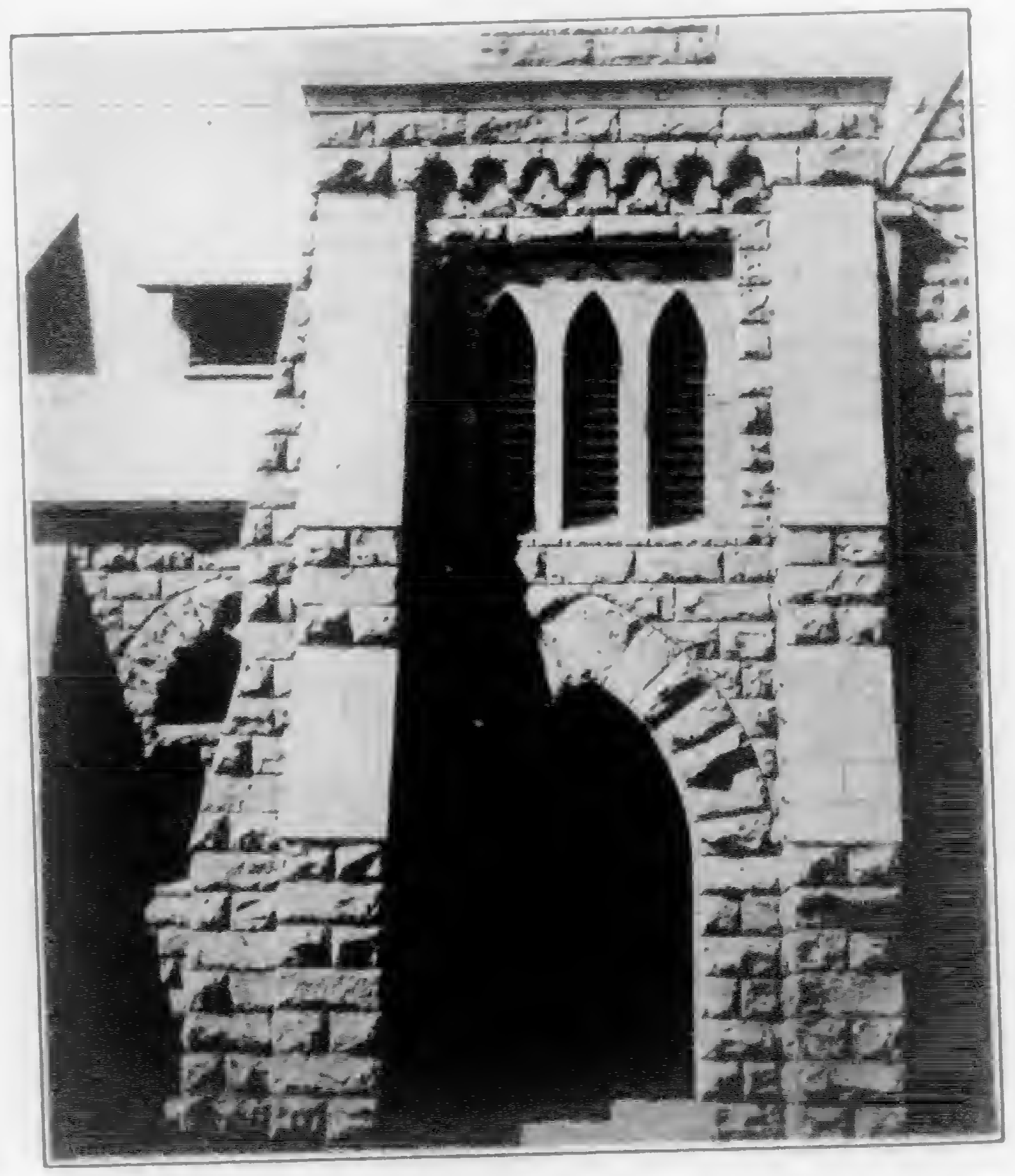
Detail of Lanai Residence of William S. Irwin

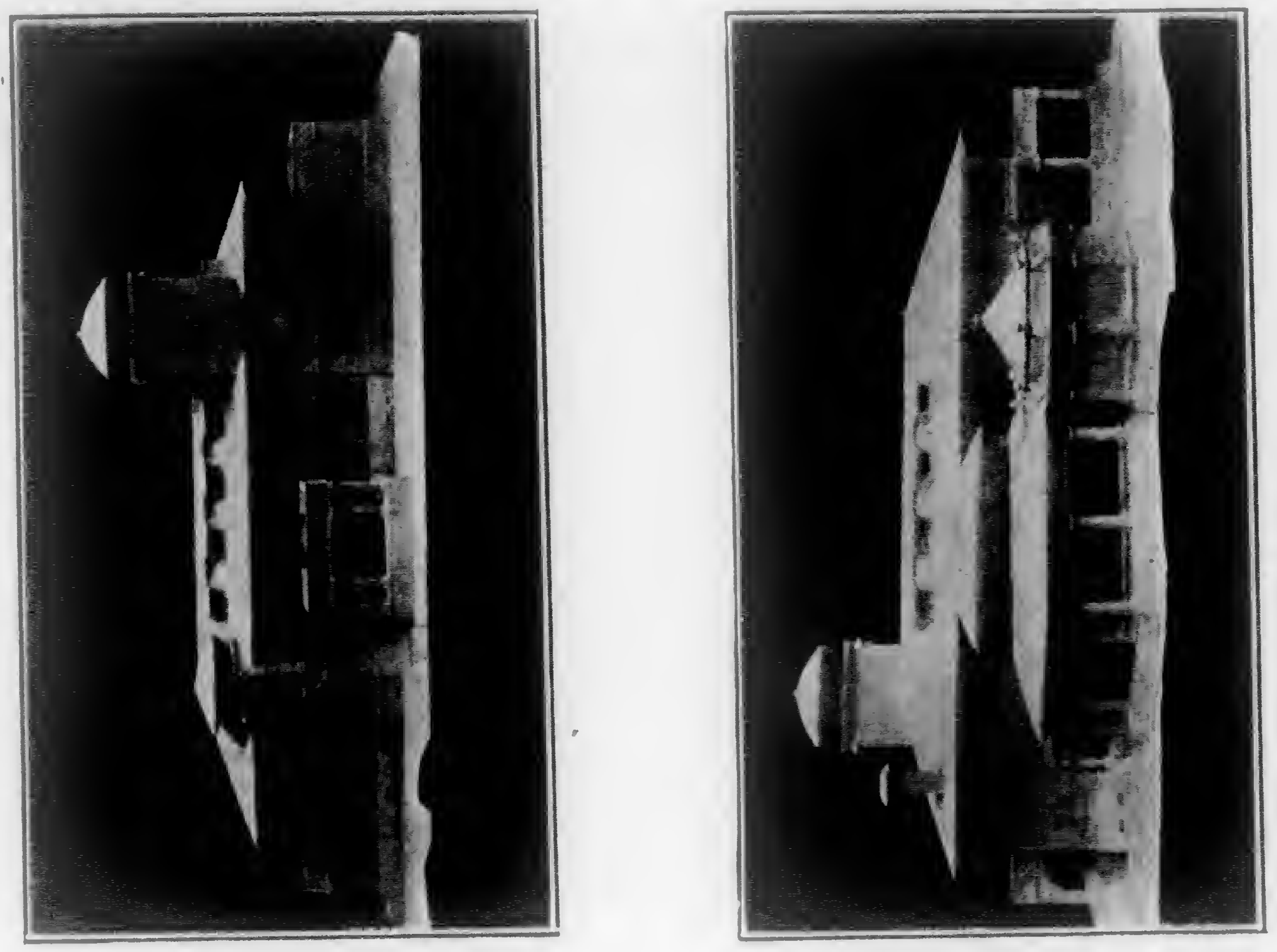


BISHOP
MEMORIAL
CHAPEL,
Honolulu.

C. W. DICKEY,
Architect

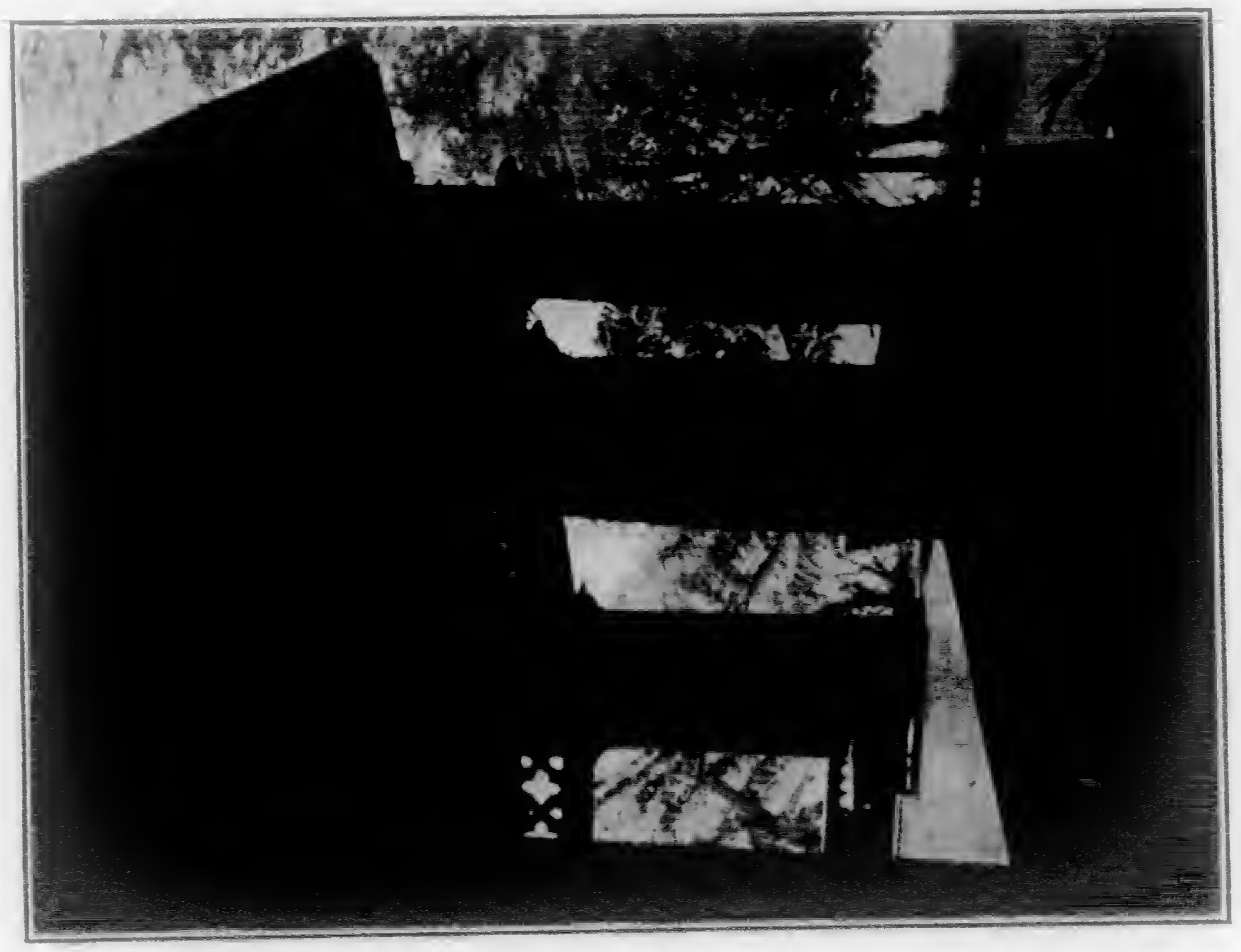
Entrance
of
BISHOP
MEMORIAL
CHAPEL



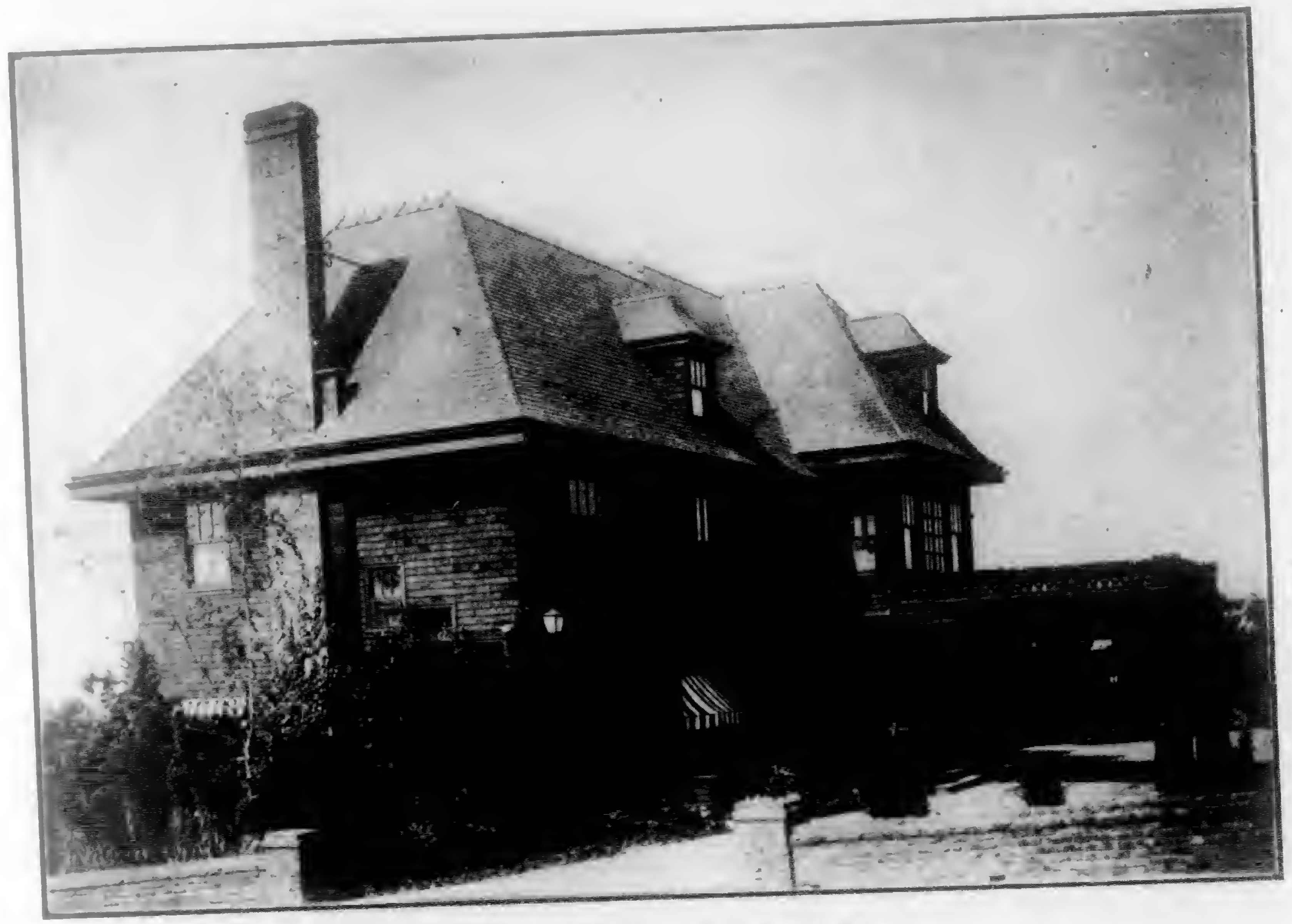


Plaster Models of the Residence of William S. Irwin, Honolulu

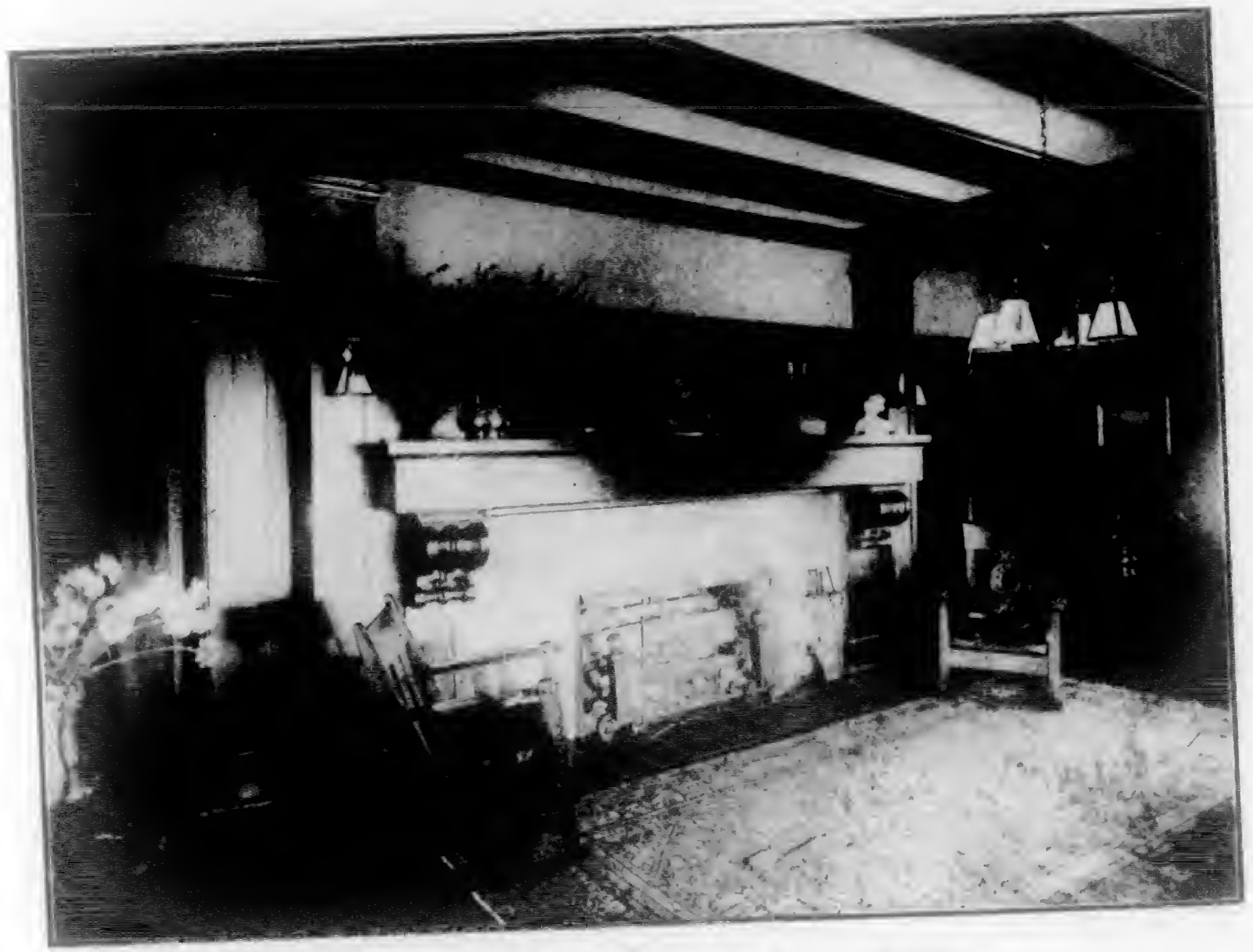
C. W. Dickey, Architect



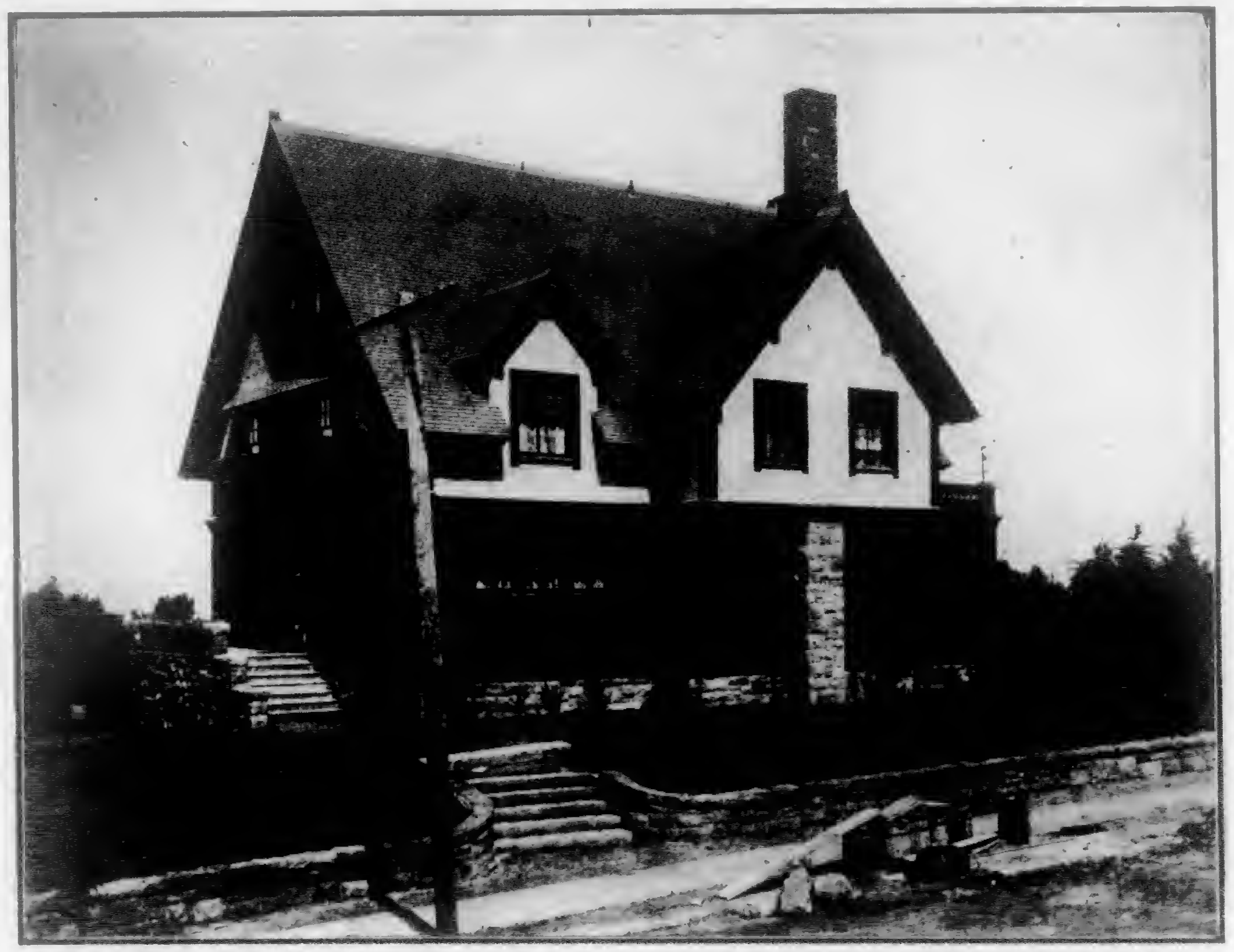
Detail of Lanai, Residence of William S. Irwin



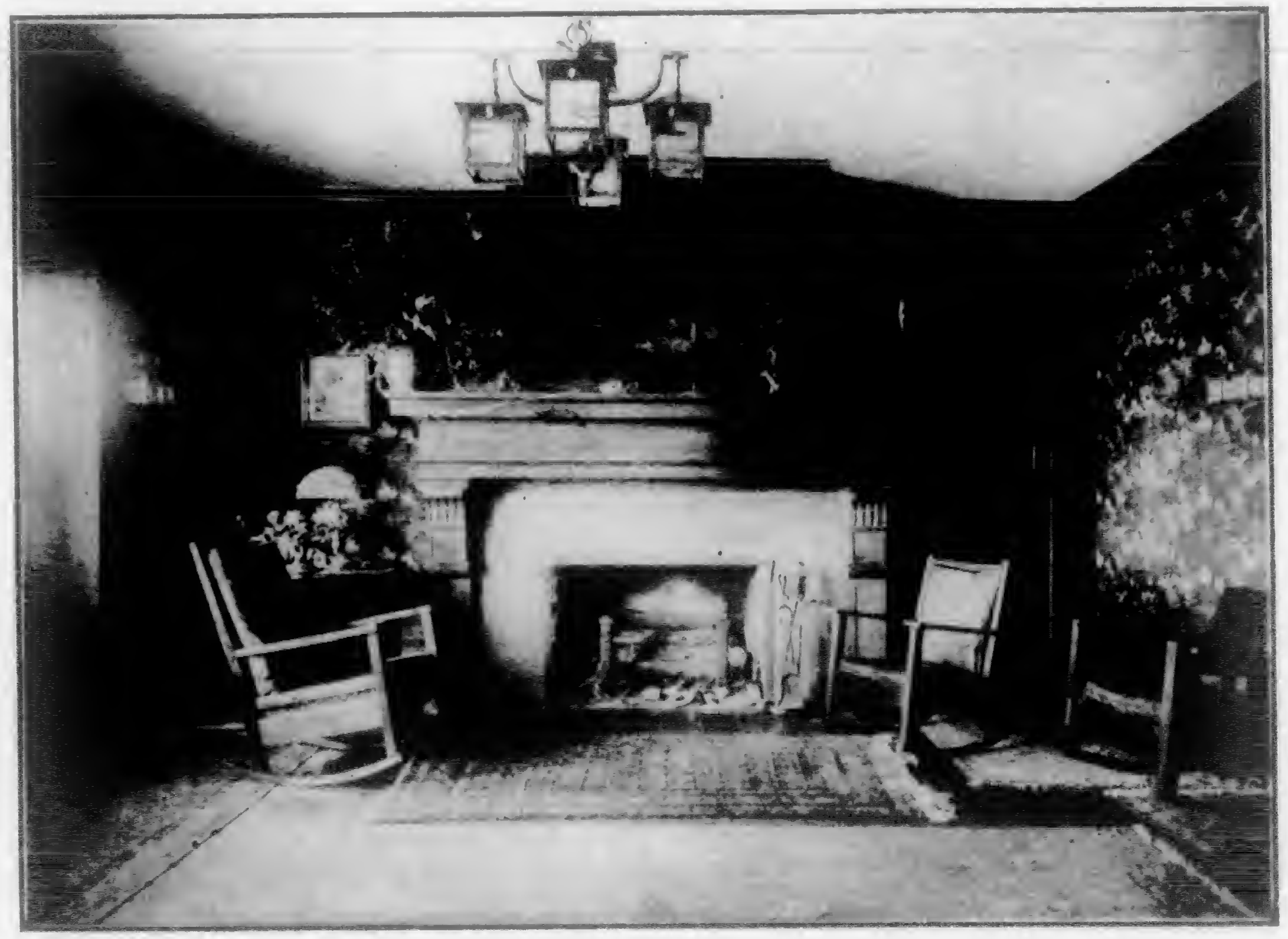
Residence of Wickham Havens, Piedmont
C. W. Dickey, Architect



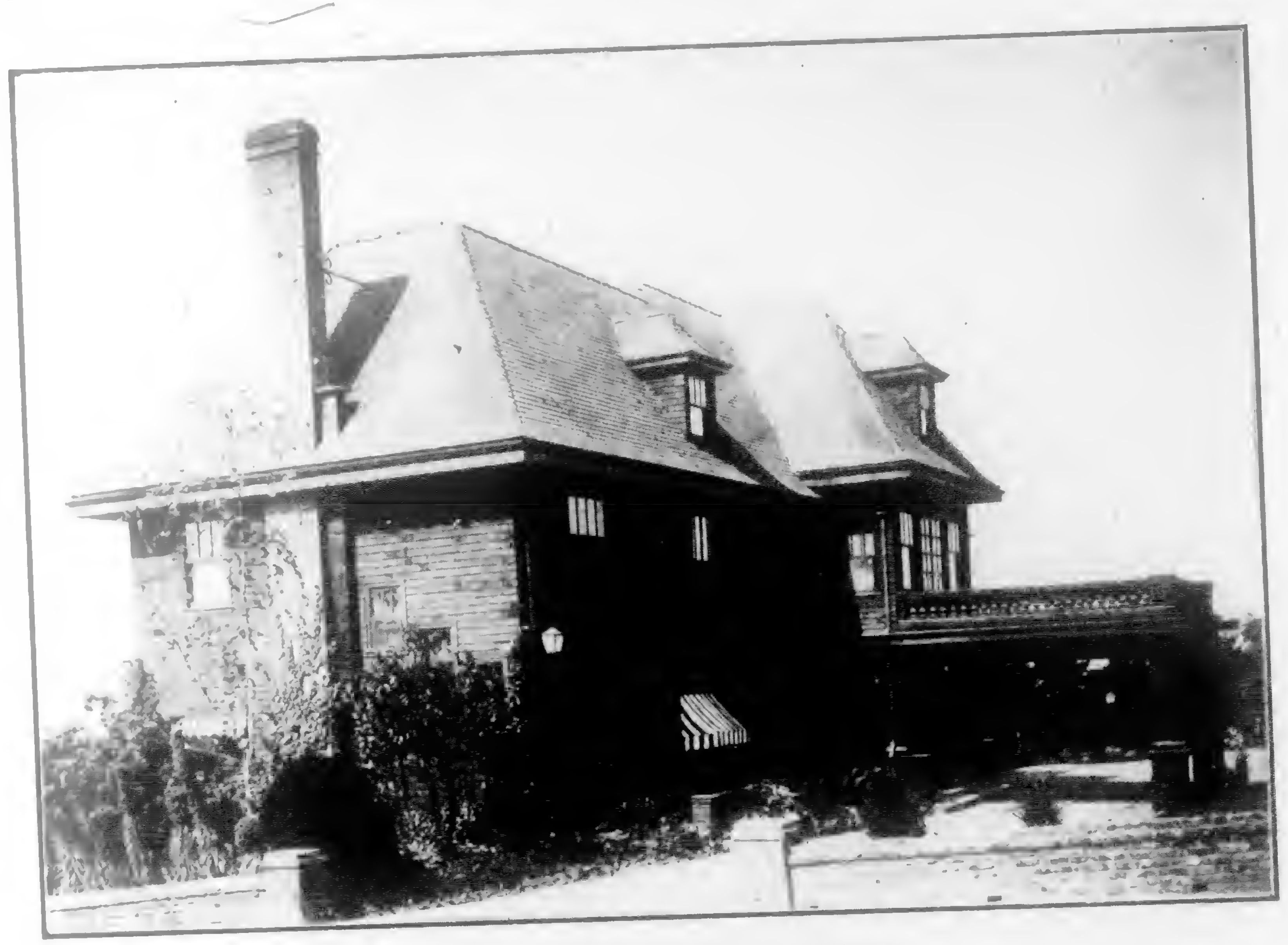
Living Room in Residence of Wickham Havens, Piedmont
C. W. Dickey, Architect



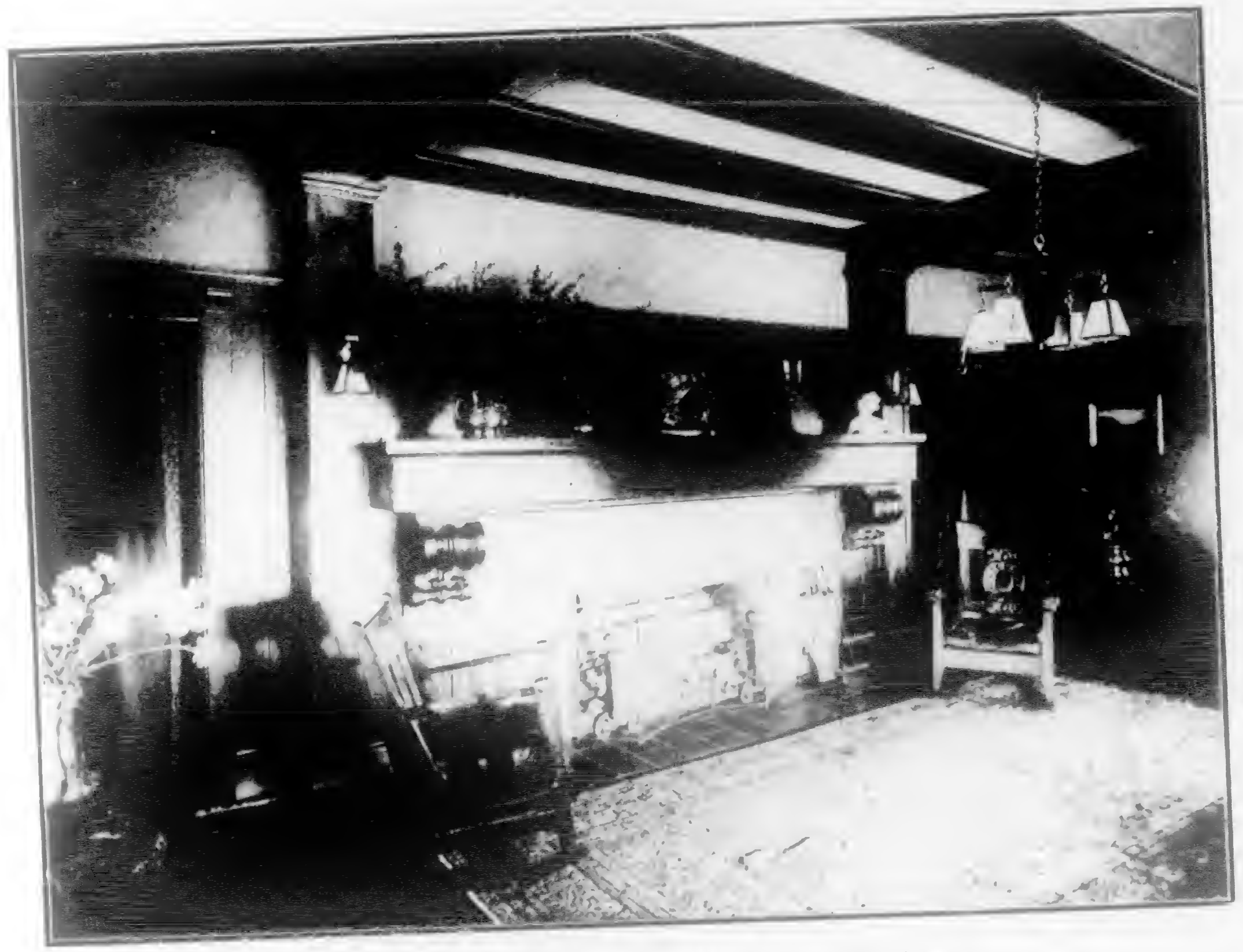
Residence of Edward W. Engs, Piedmont
C. W. Dickey, Archtecti



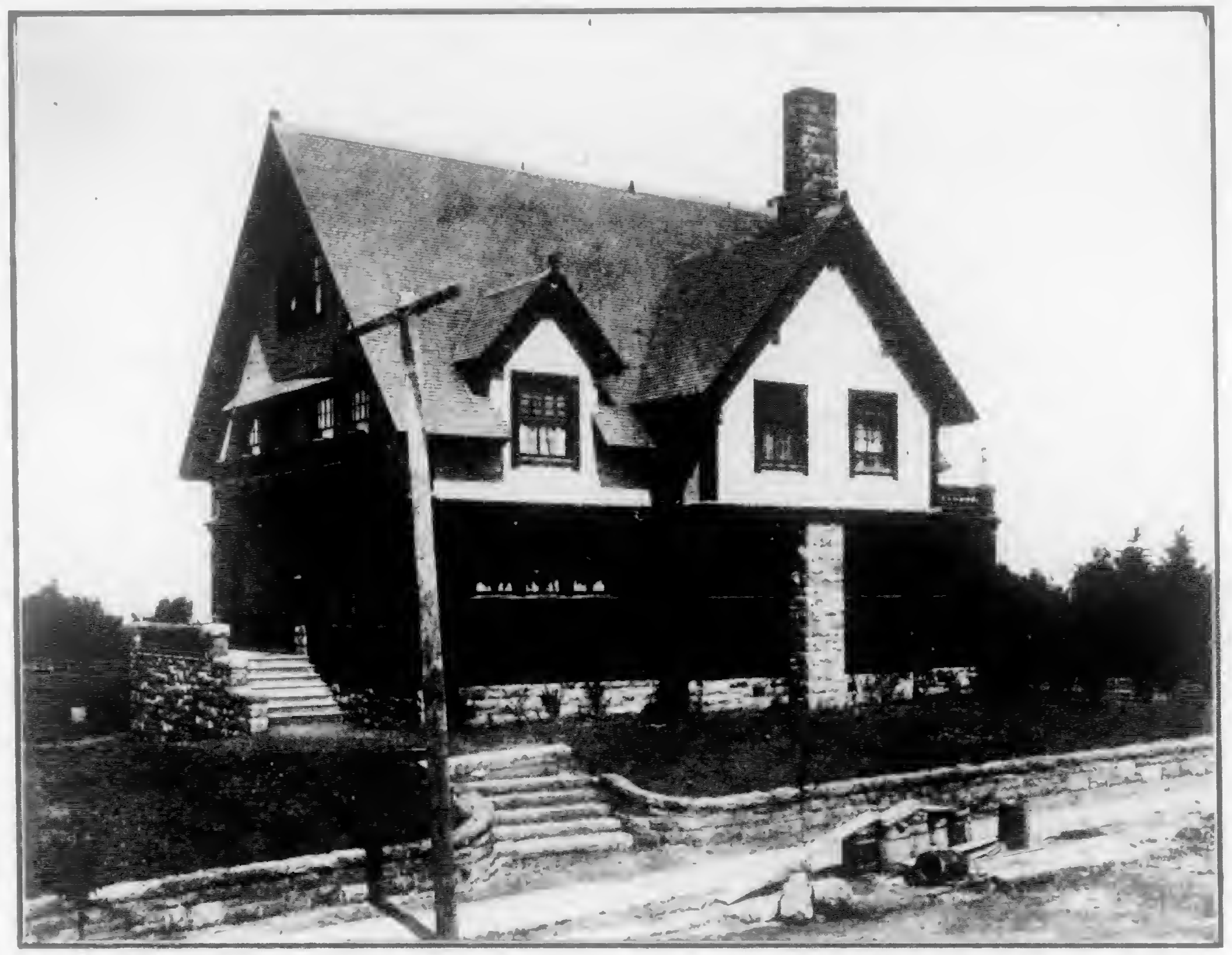
Living Room in Residence of Edward W. Engs, Piedmont
C. W. Dickey, Architect



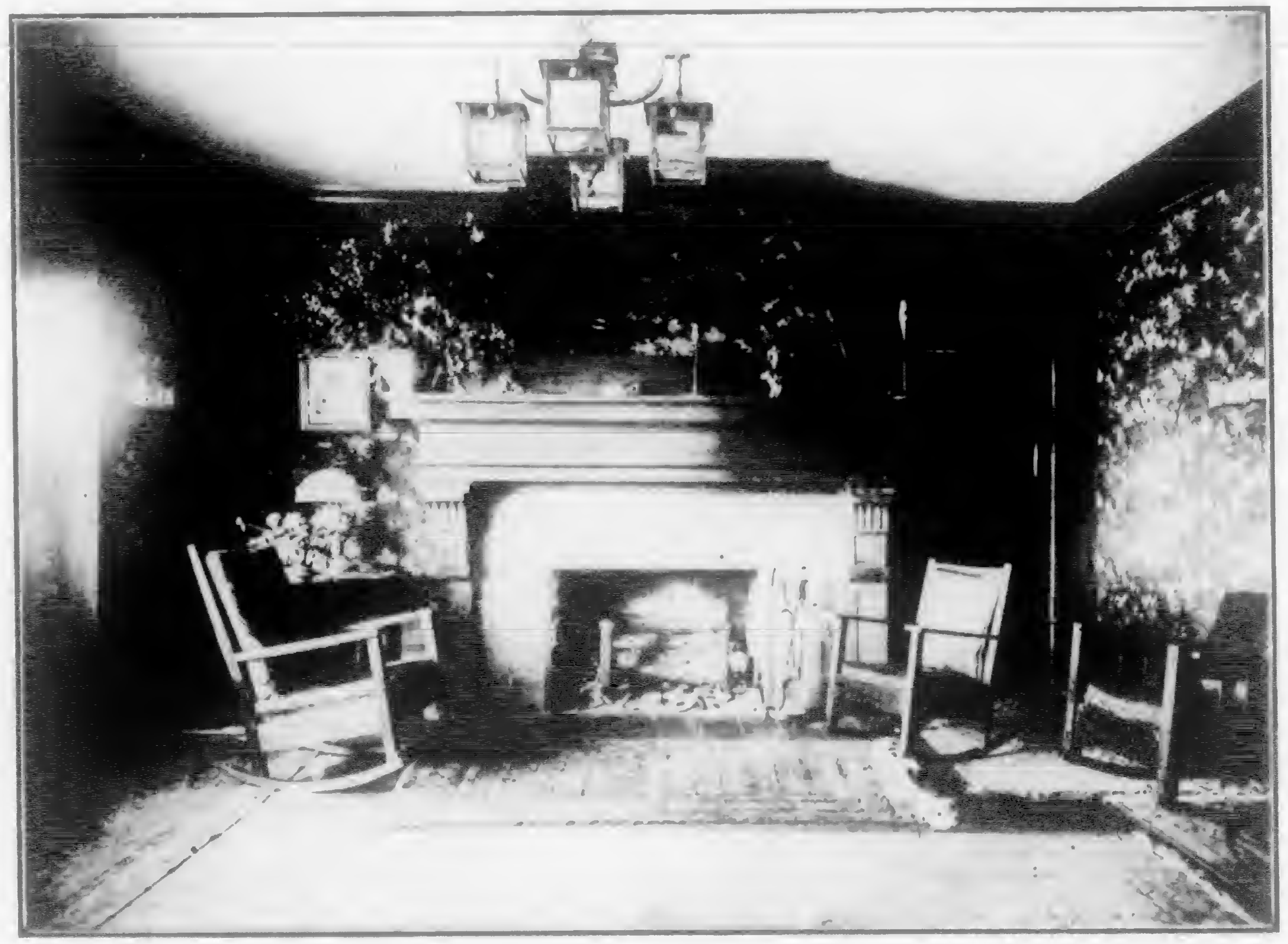
Residence of Wickham Havens, Piedmont
C. W. Dickey, Architect



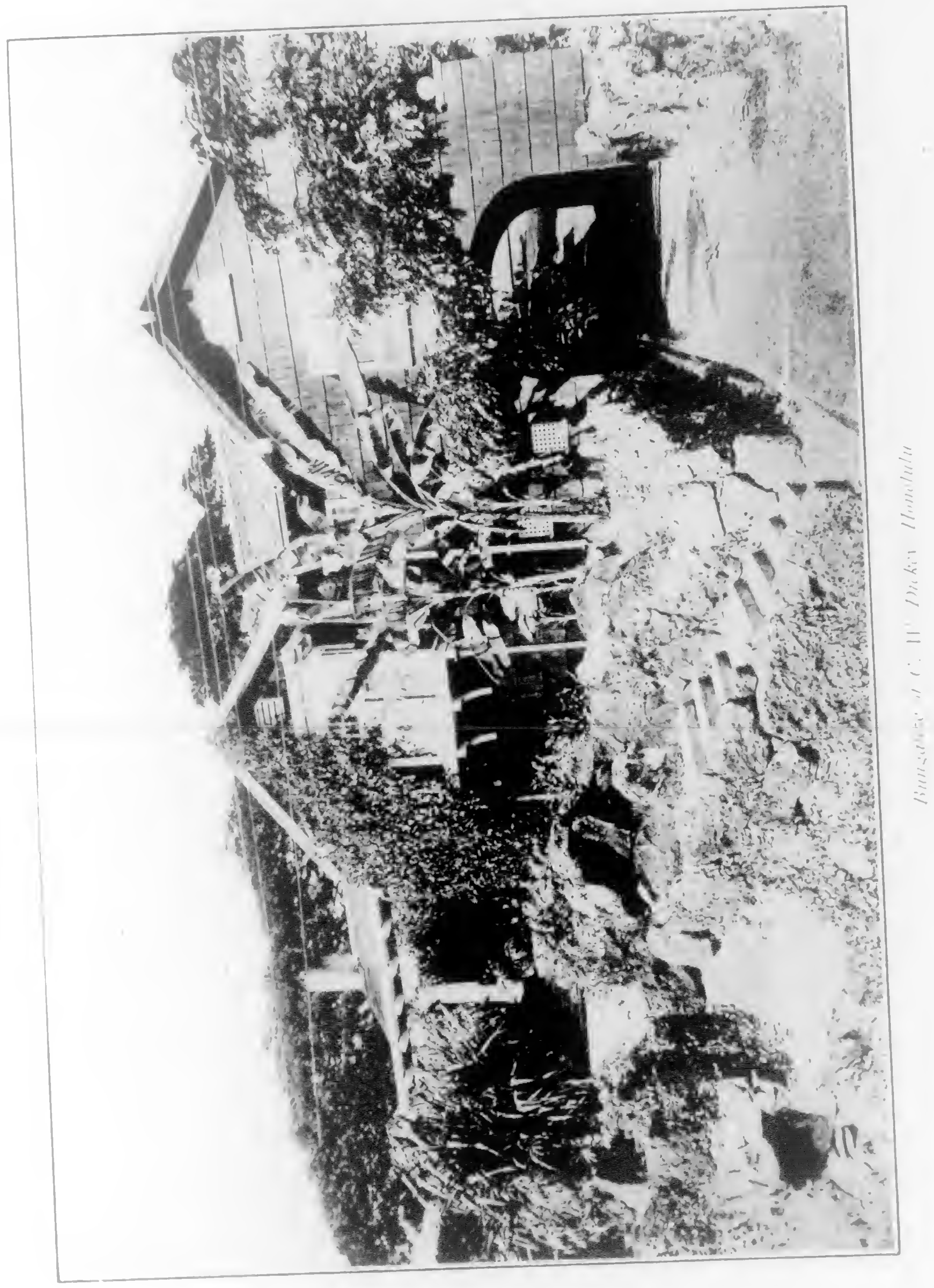
Living Room in Residence of Wickham Havens, Piedmont
C. W. Dickey, Architect



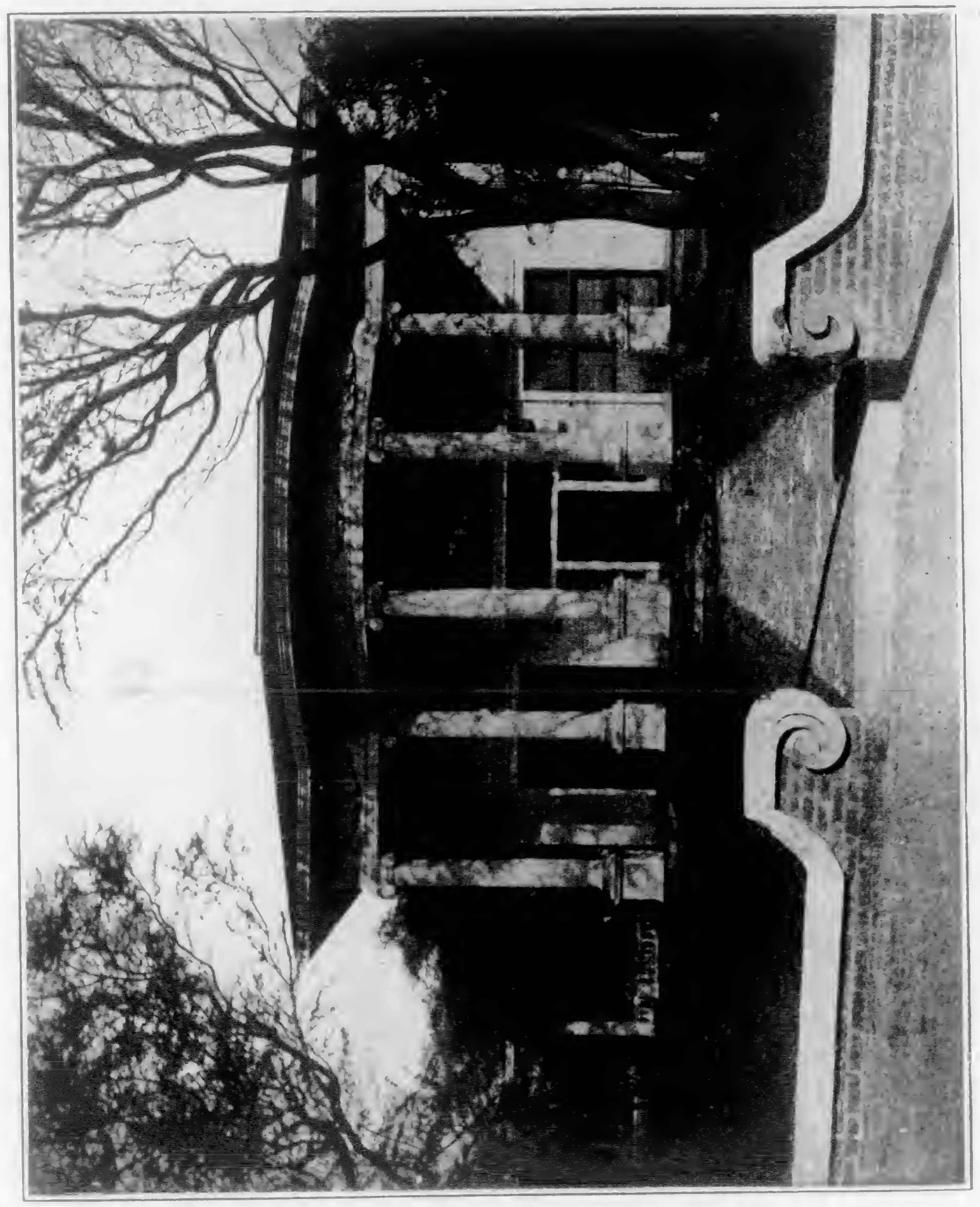
Residence of Edward W. Engs, Piedmont
C. W. Dickey, Architects



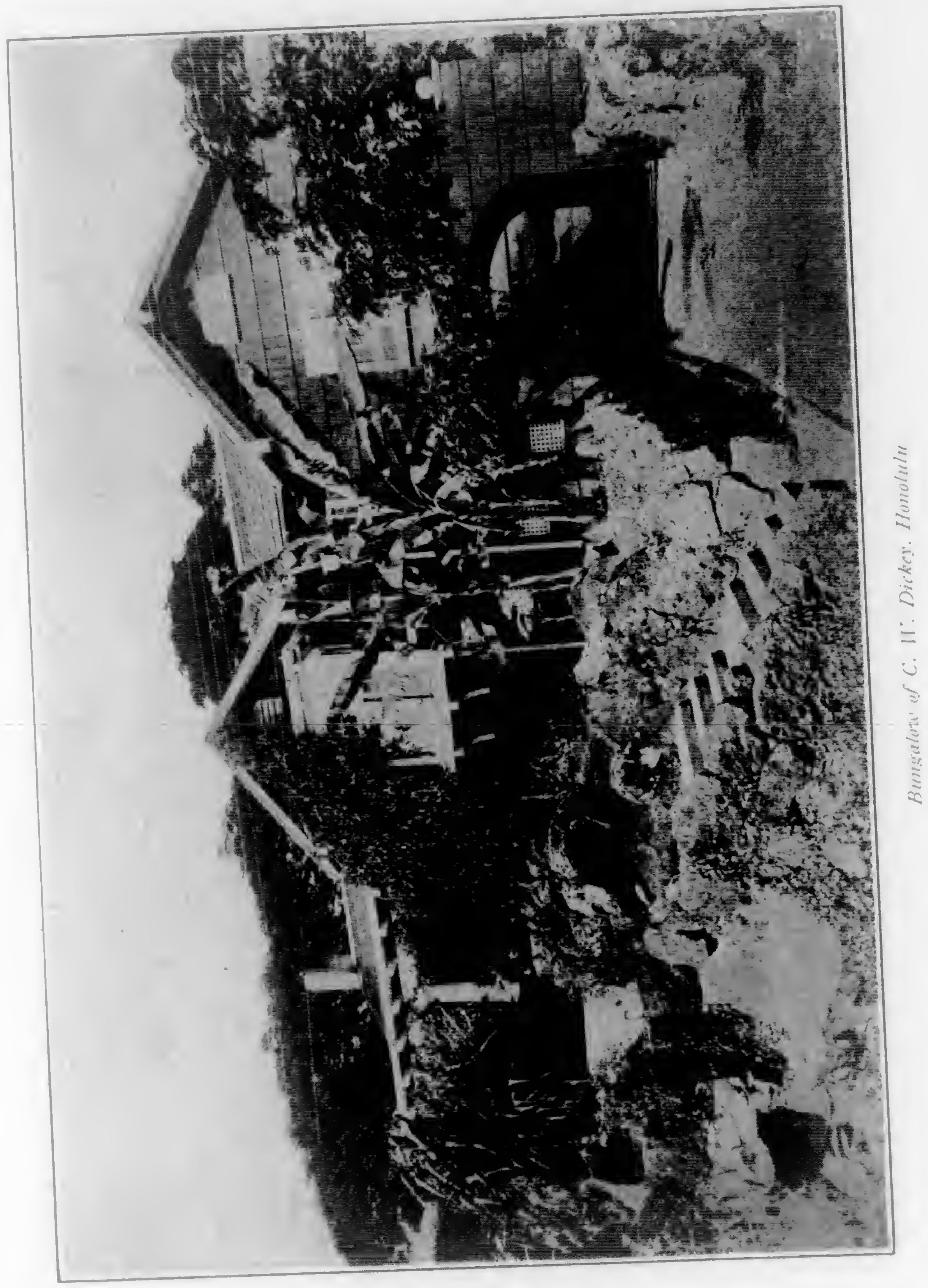
Living Room in Residence of Edward W. Engs, Piedmont
C. W. Dickey, Architect



Bungalow of C. W. Dickey, Honolulu

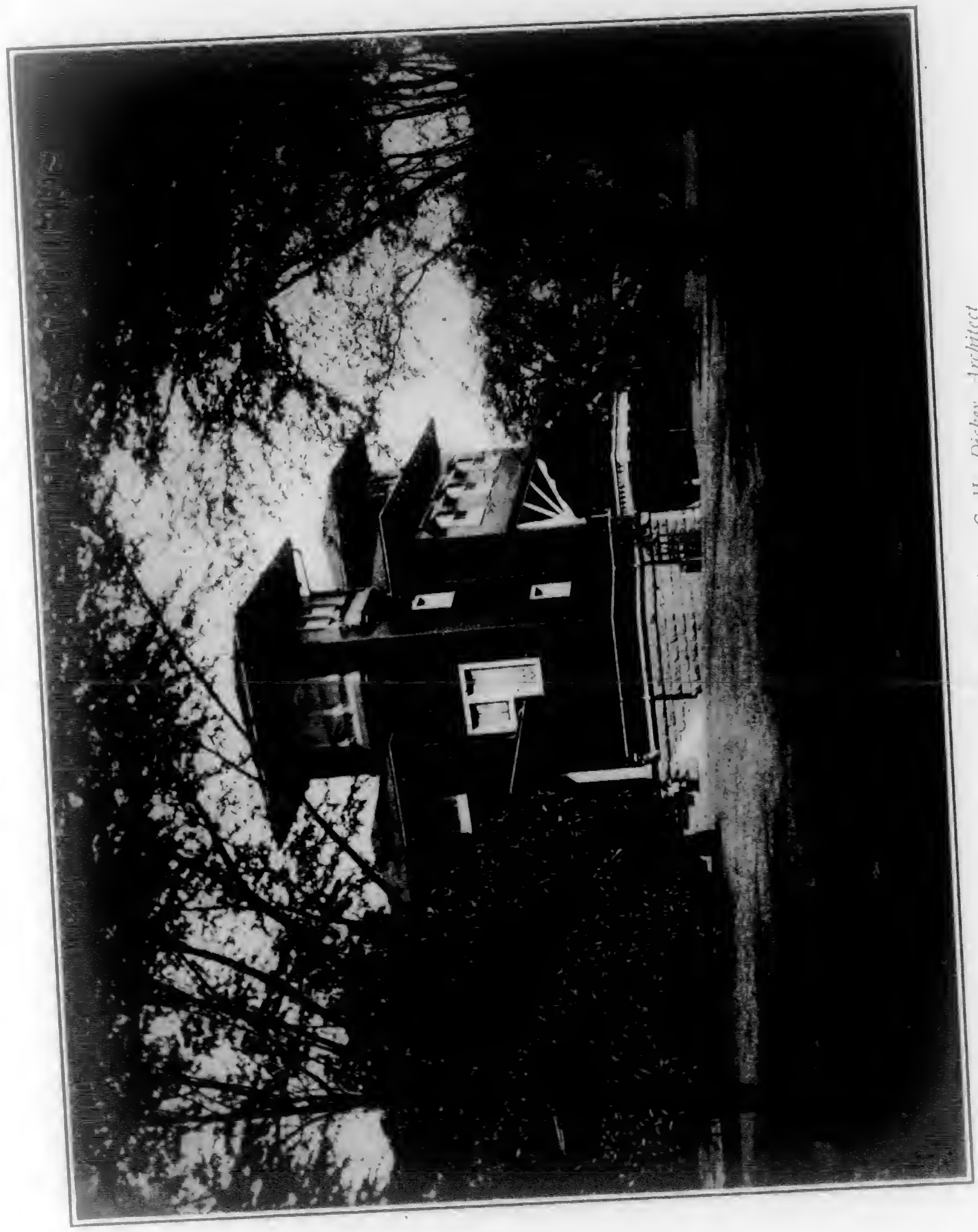


Residence of Frank Halstead, Honolulu C. W. Dickey, Architect

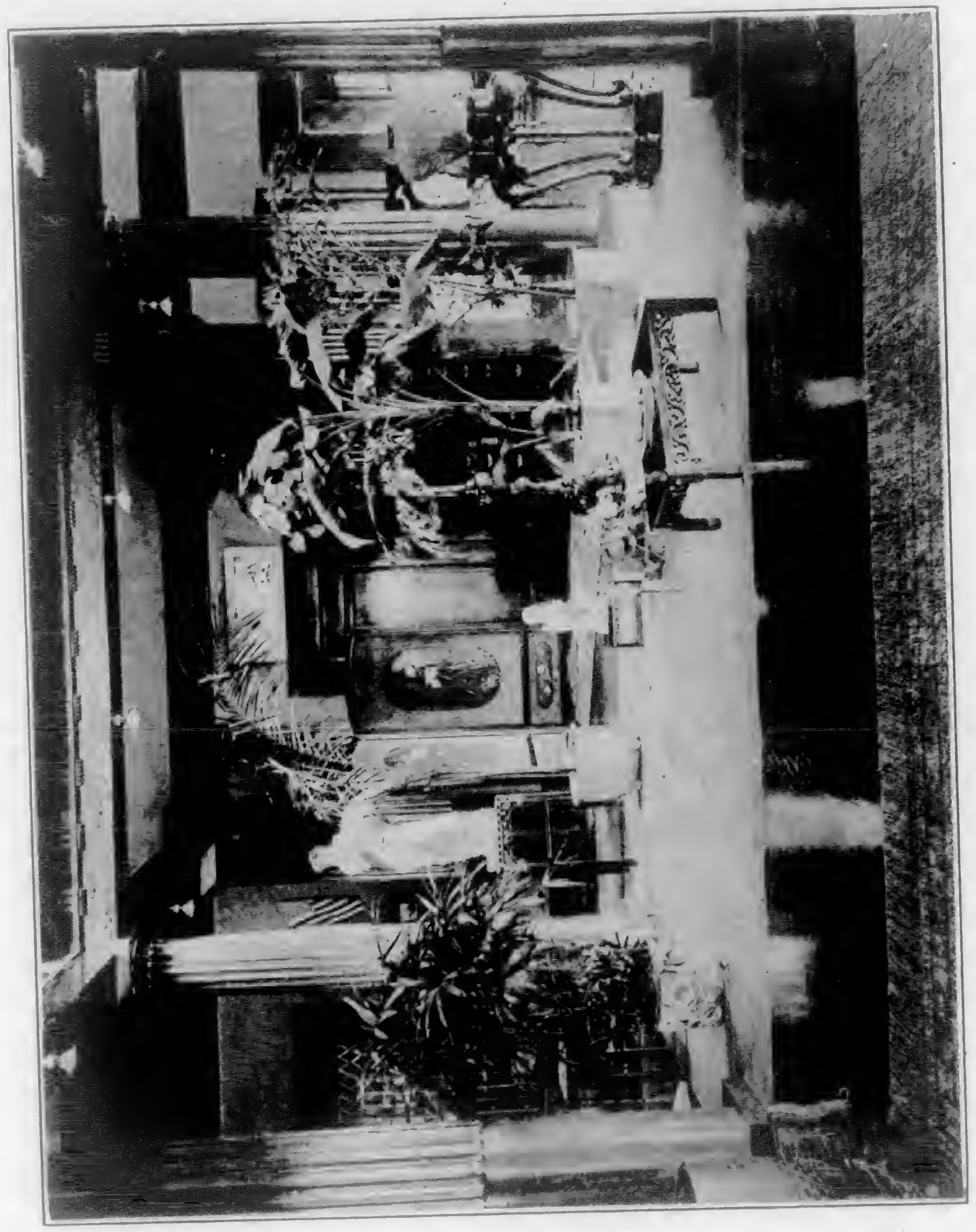


Bungalow of C. W. Dickey, Honolulu

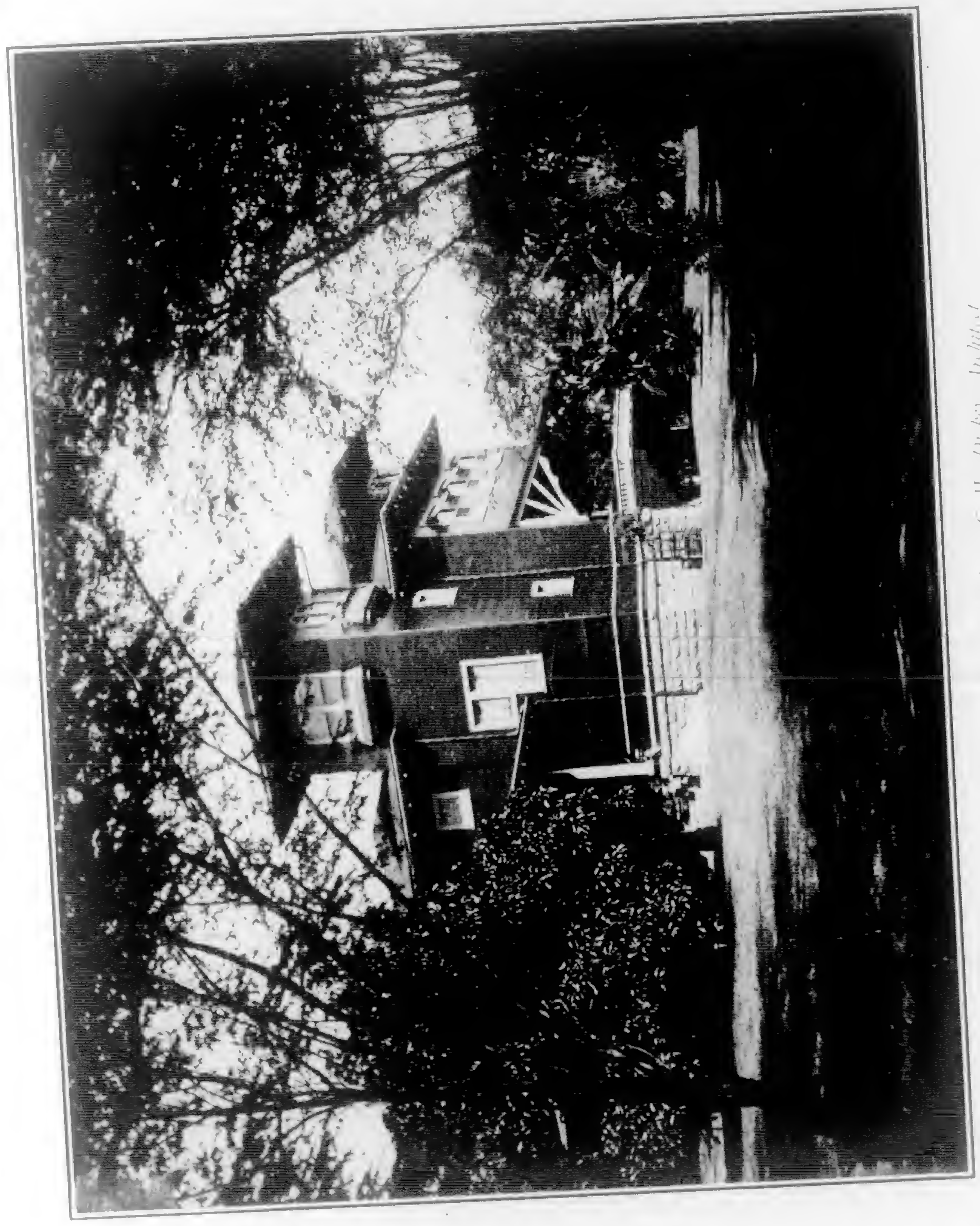
Residence of Frank Halstead, Honolulu.—C. W. Dickey, Architect



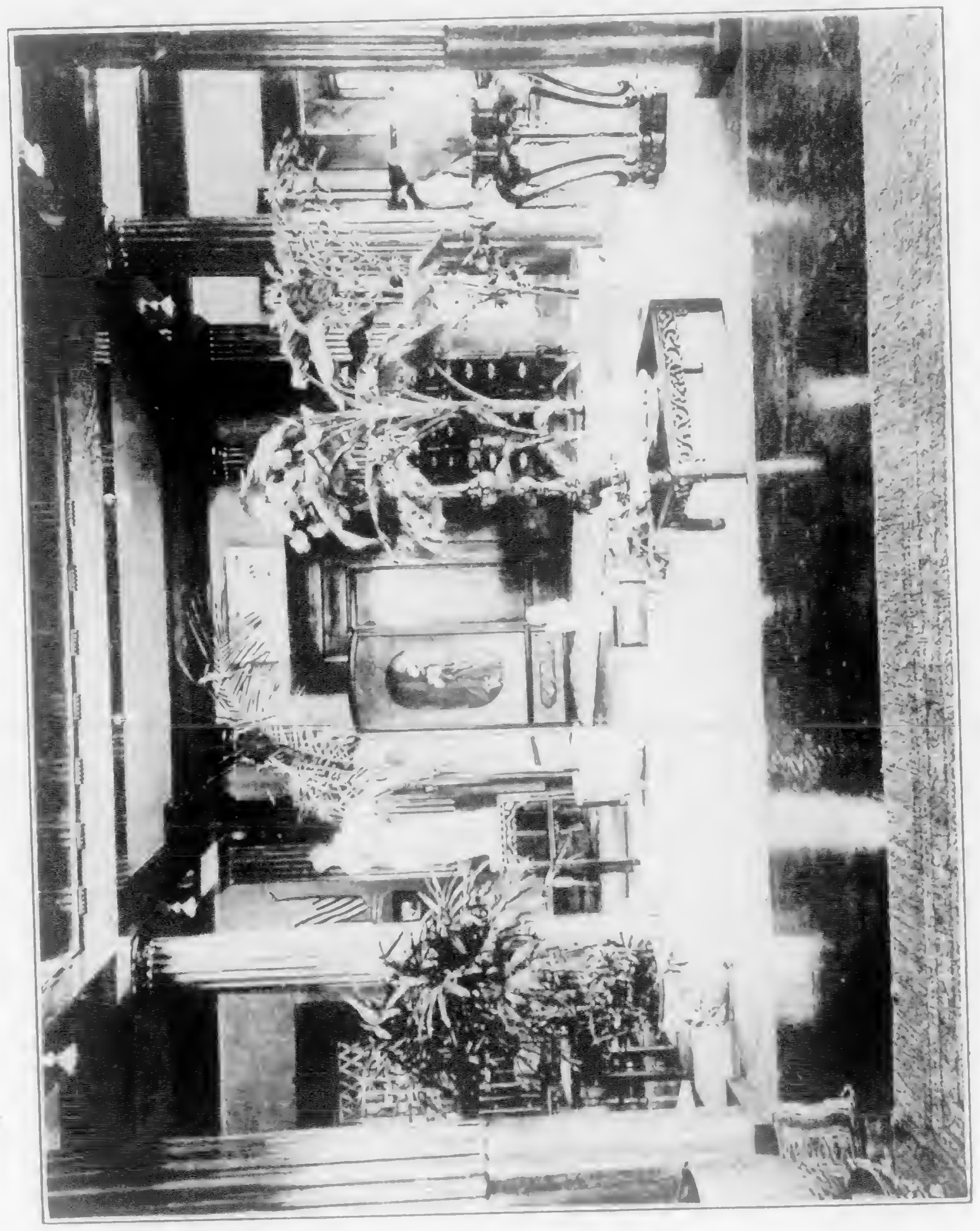
Residence of F. J. Lowrey, Honolulu. — C. W. Dickey, Architect



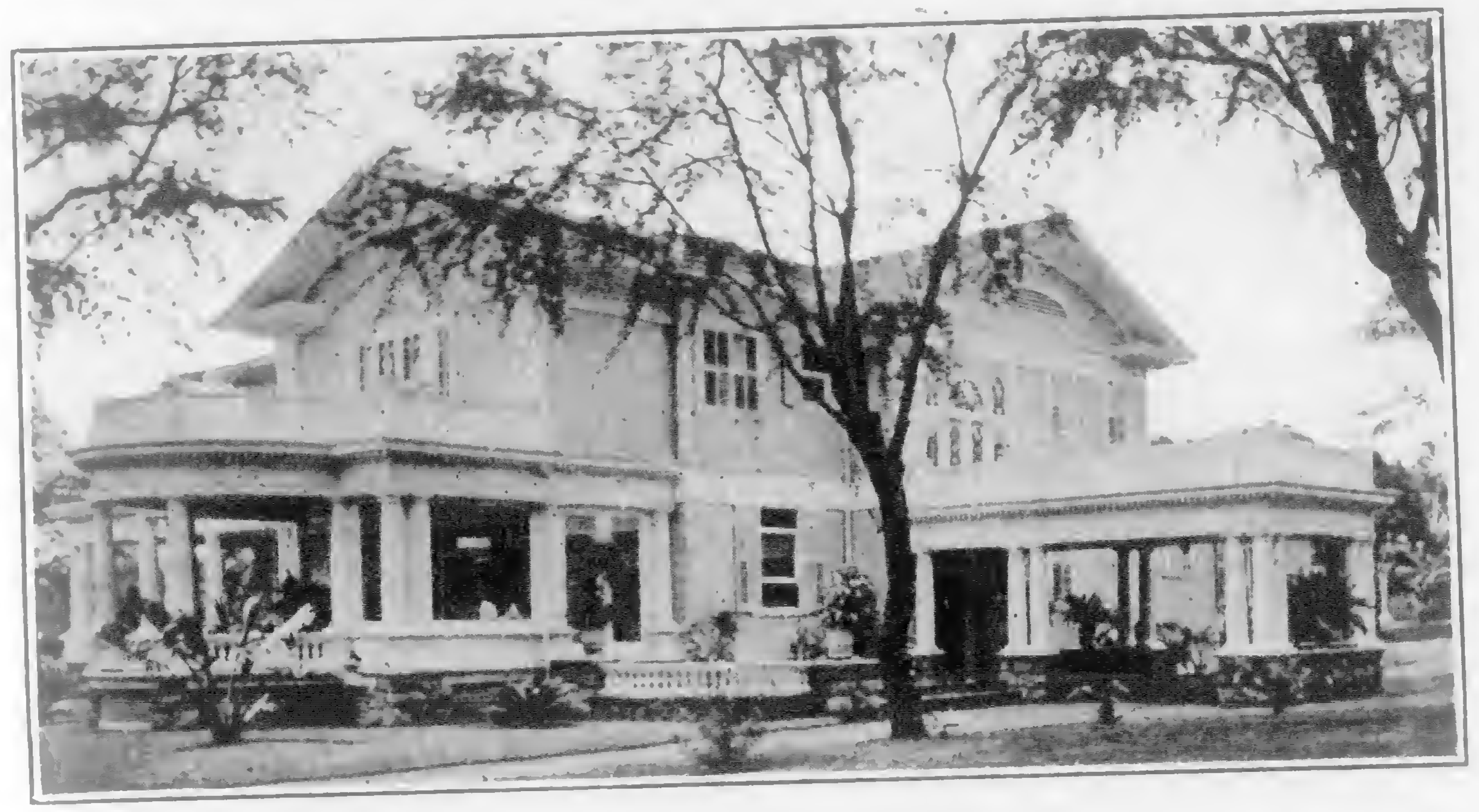
The Pompeiian Room, Residence of F. J. Lowrey, Honolulu



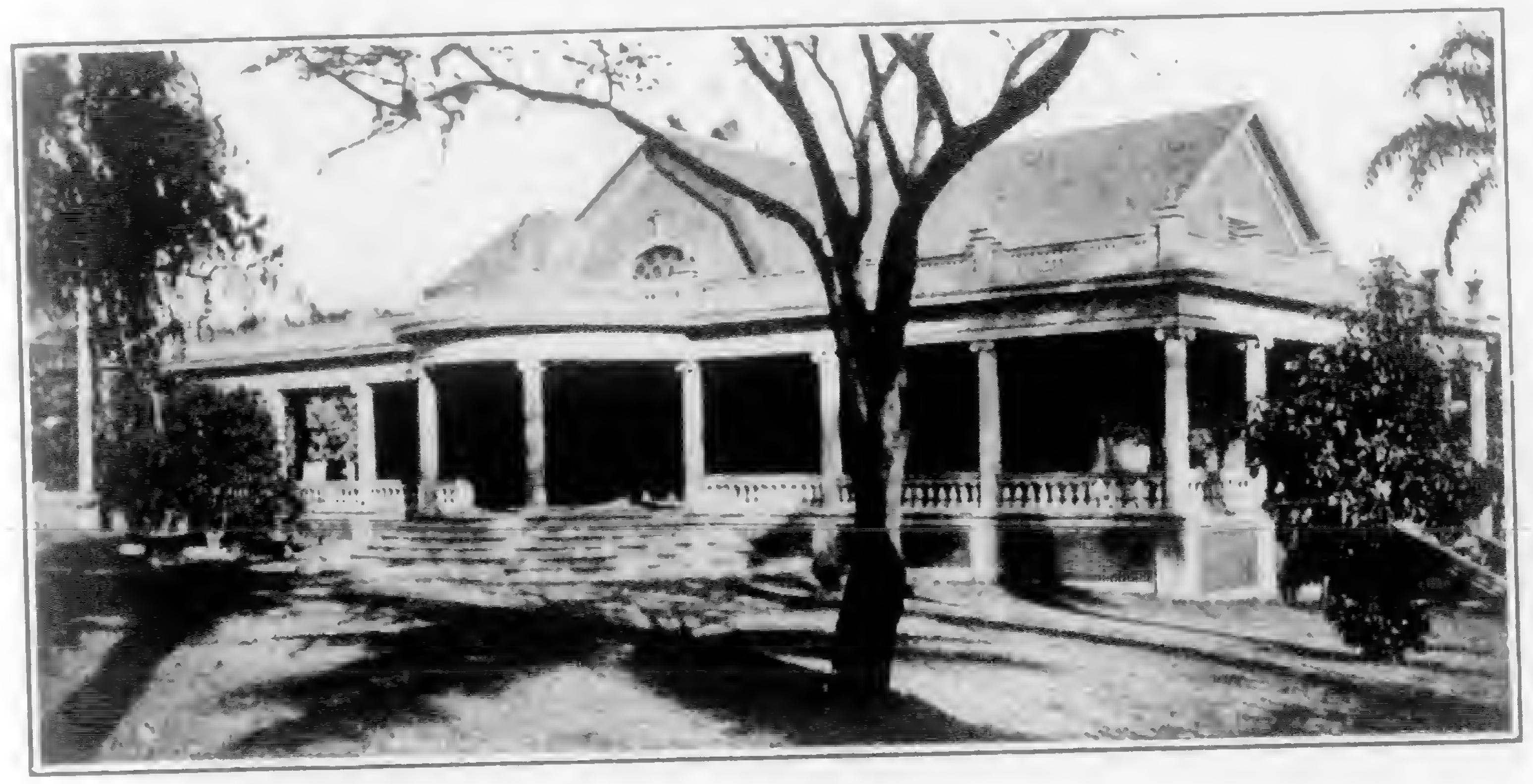
Residence of F. J. Lowrey, Honolulu. C. H. Dickey, Architect



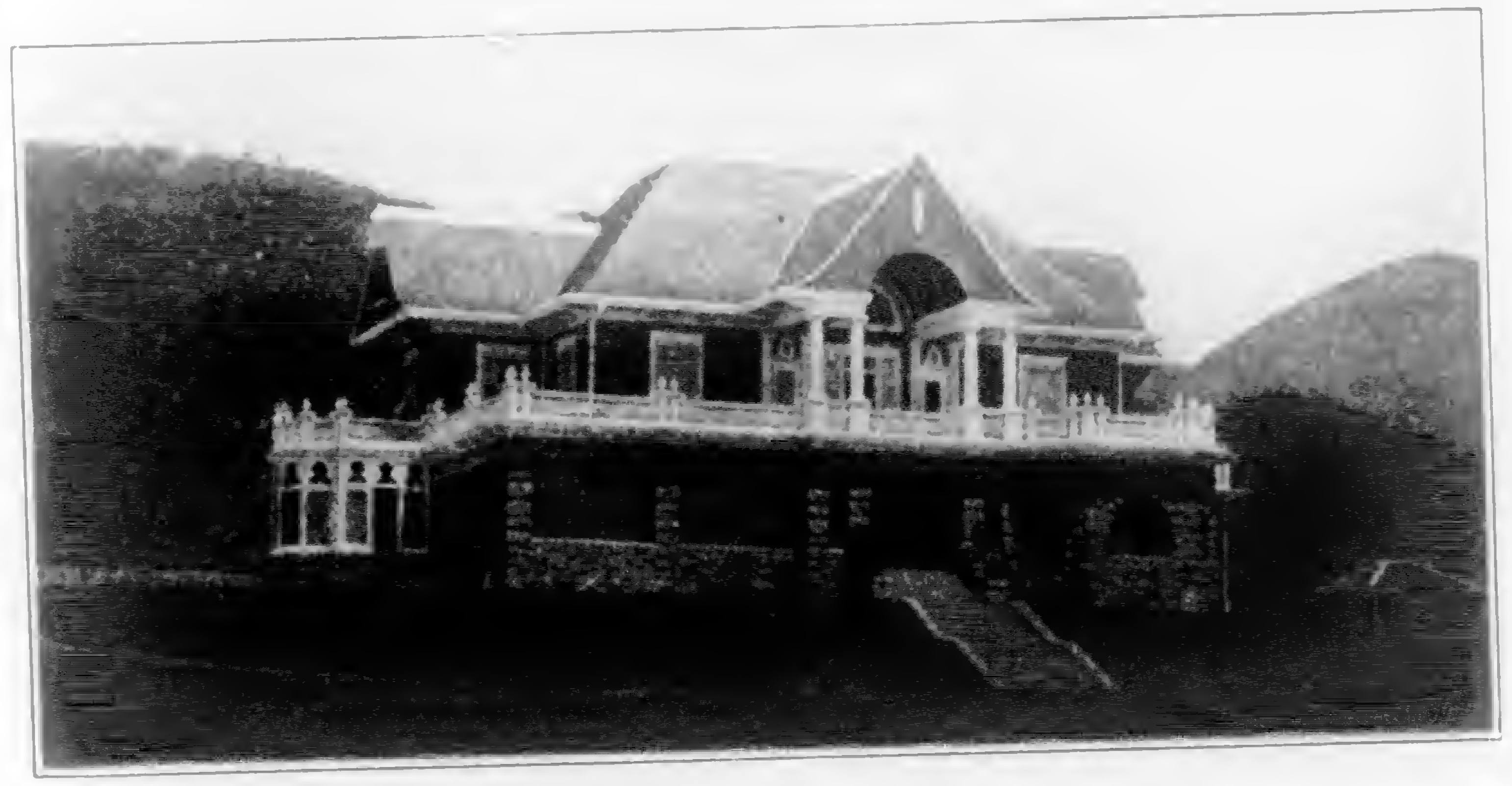
The Pompeiian Room, Residence of F. J. Lowrey, Honolulu



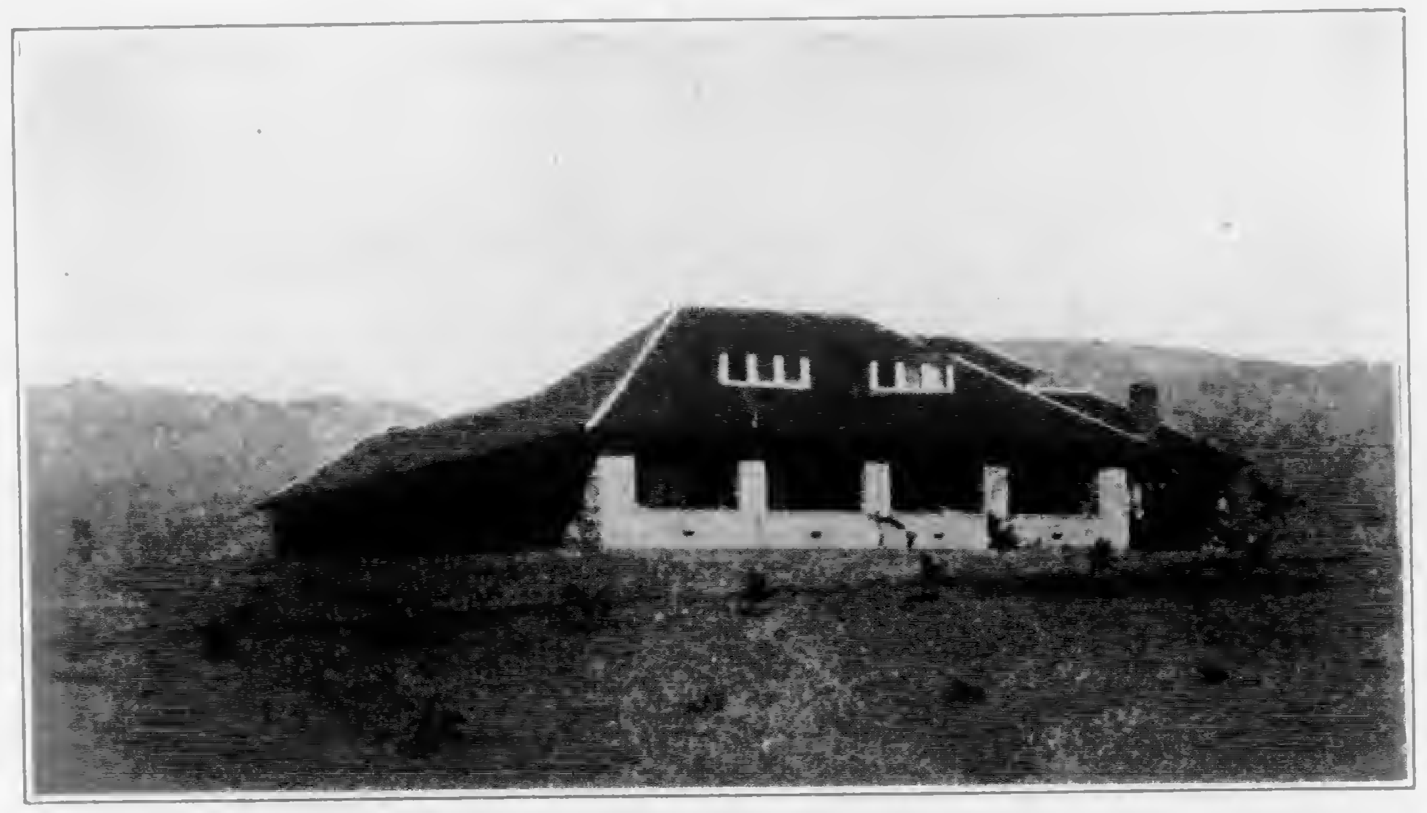
Residence of E. D. Tenney, Honolulu



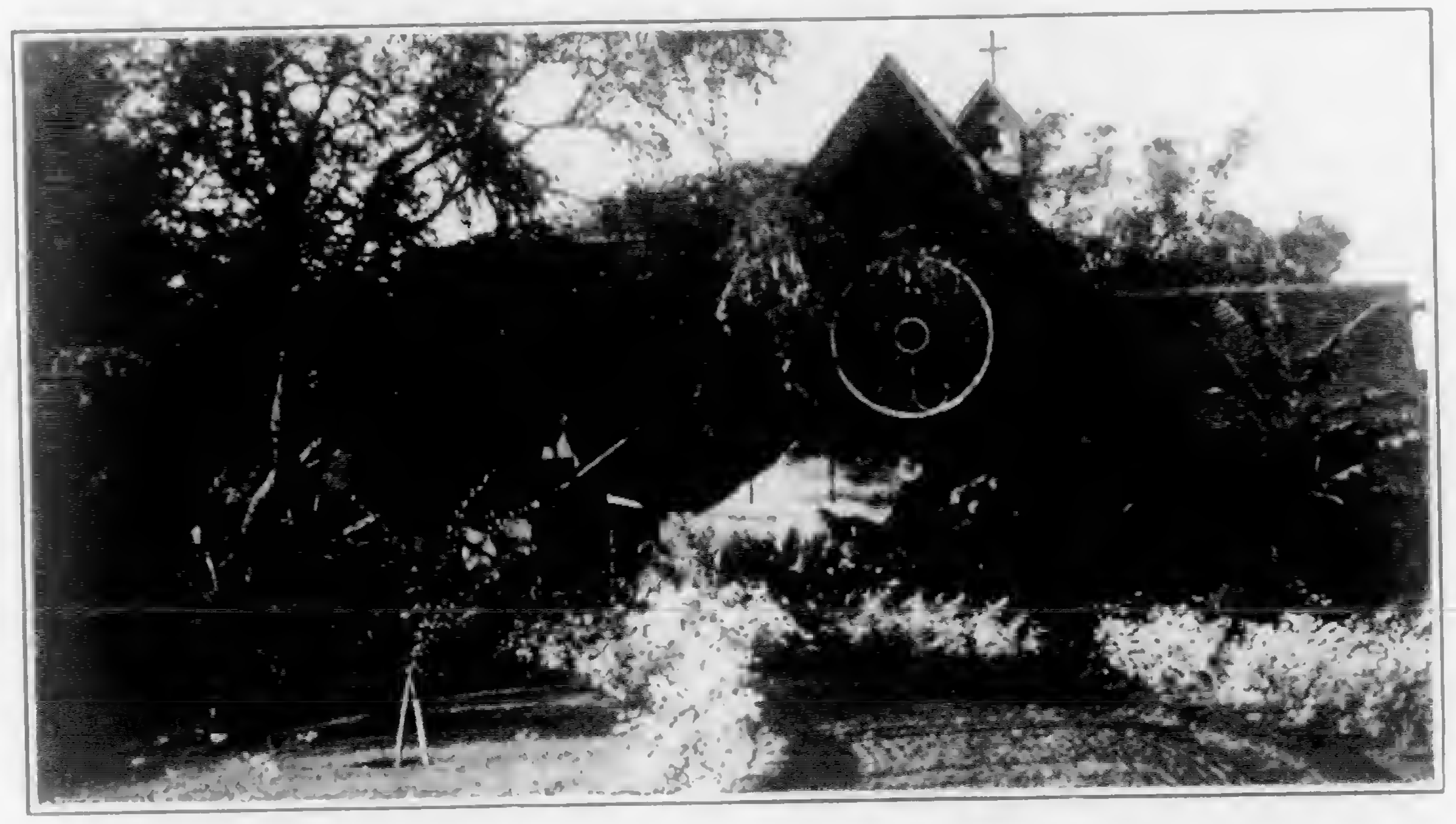
Bungalow of D. P. R. Isenberg, Honolulu



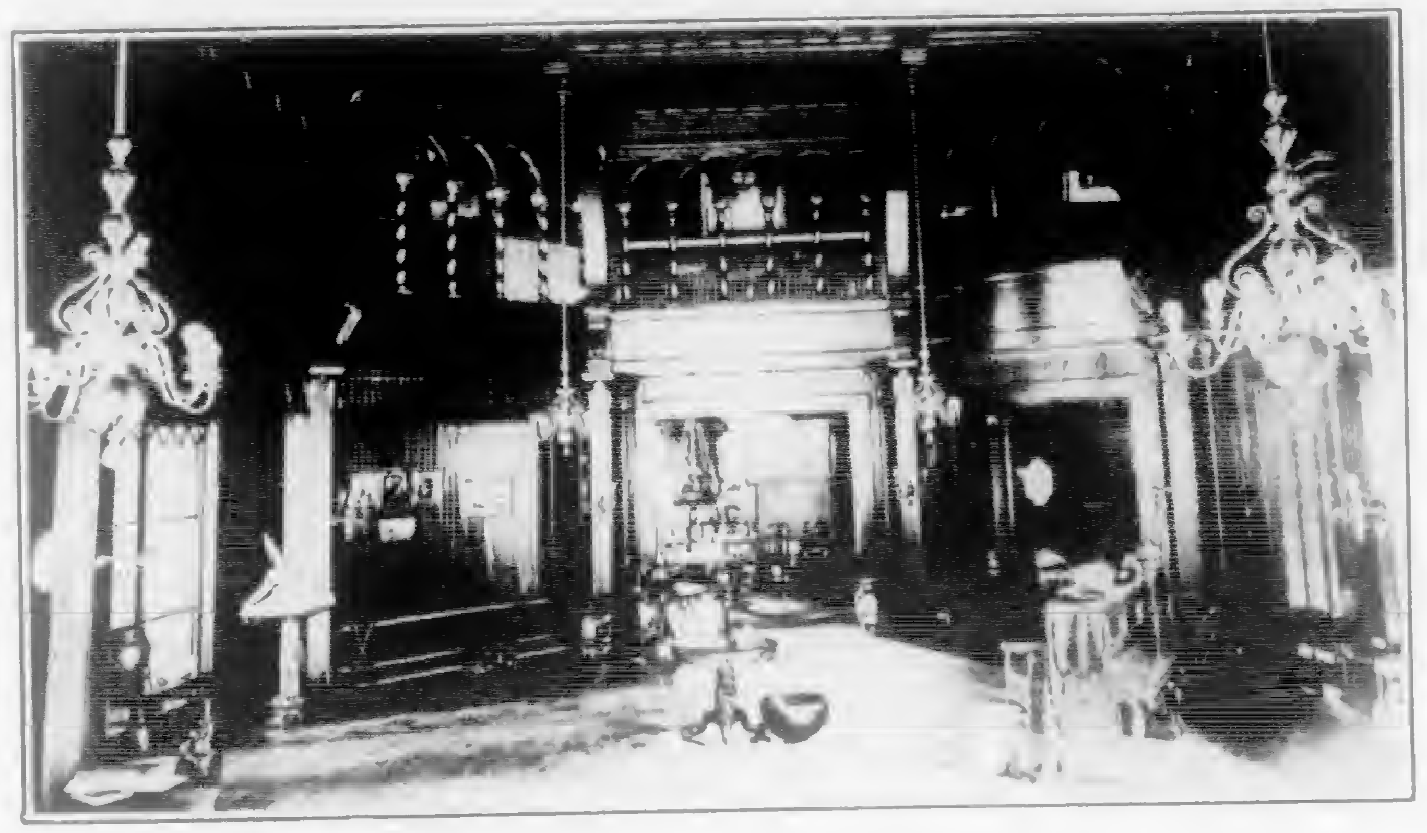
Residence of J. P. Cooke, Honolulu



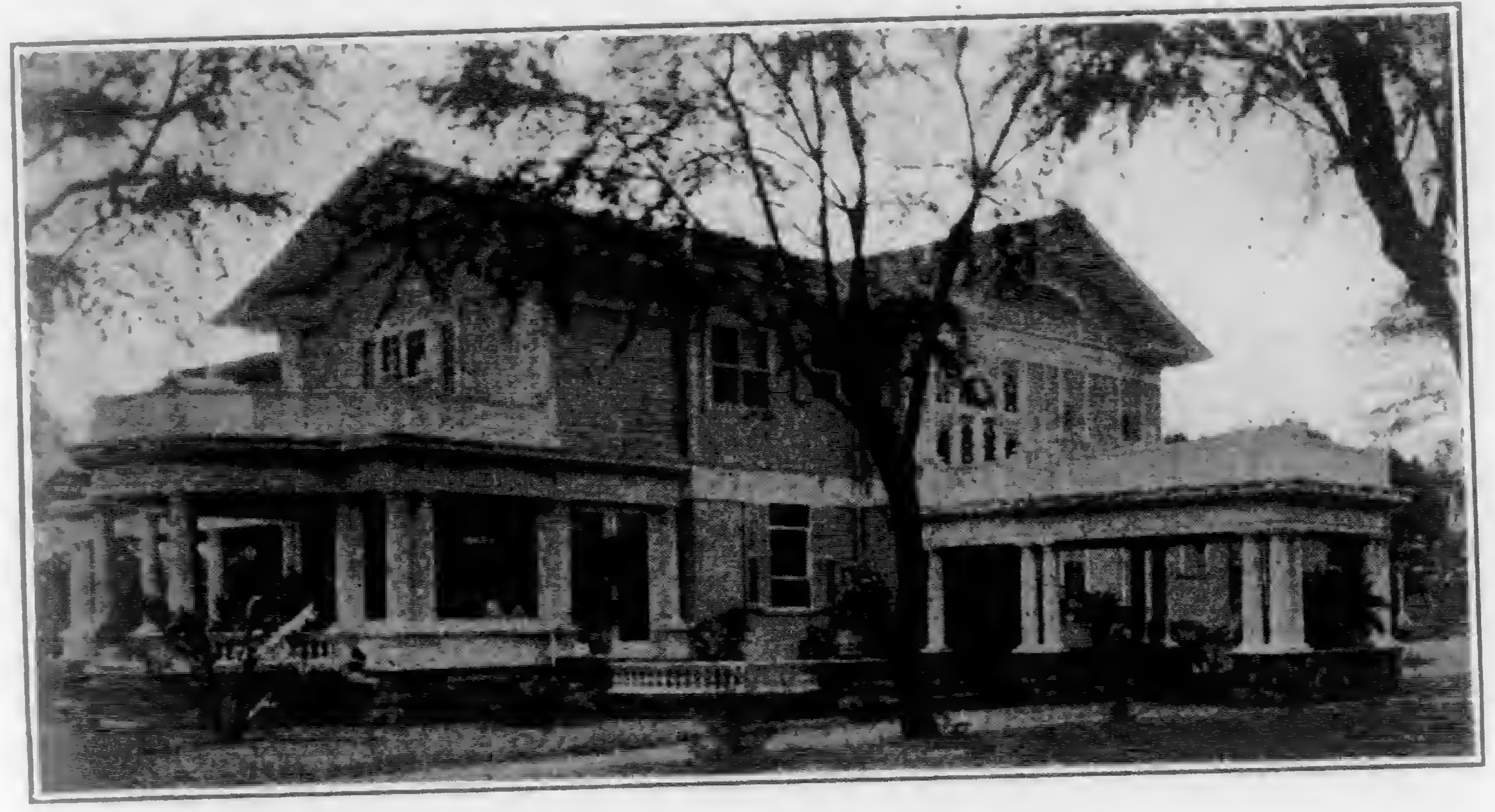
Bungalow of Henry E. Cooper, Honolulu



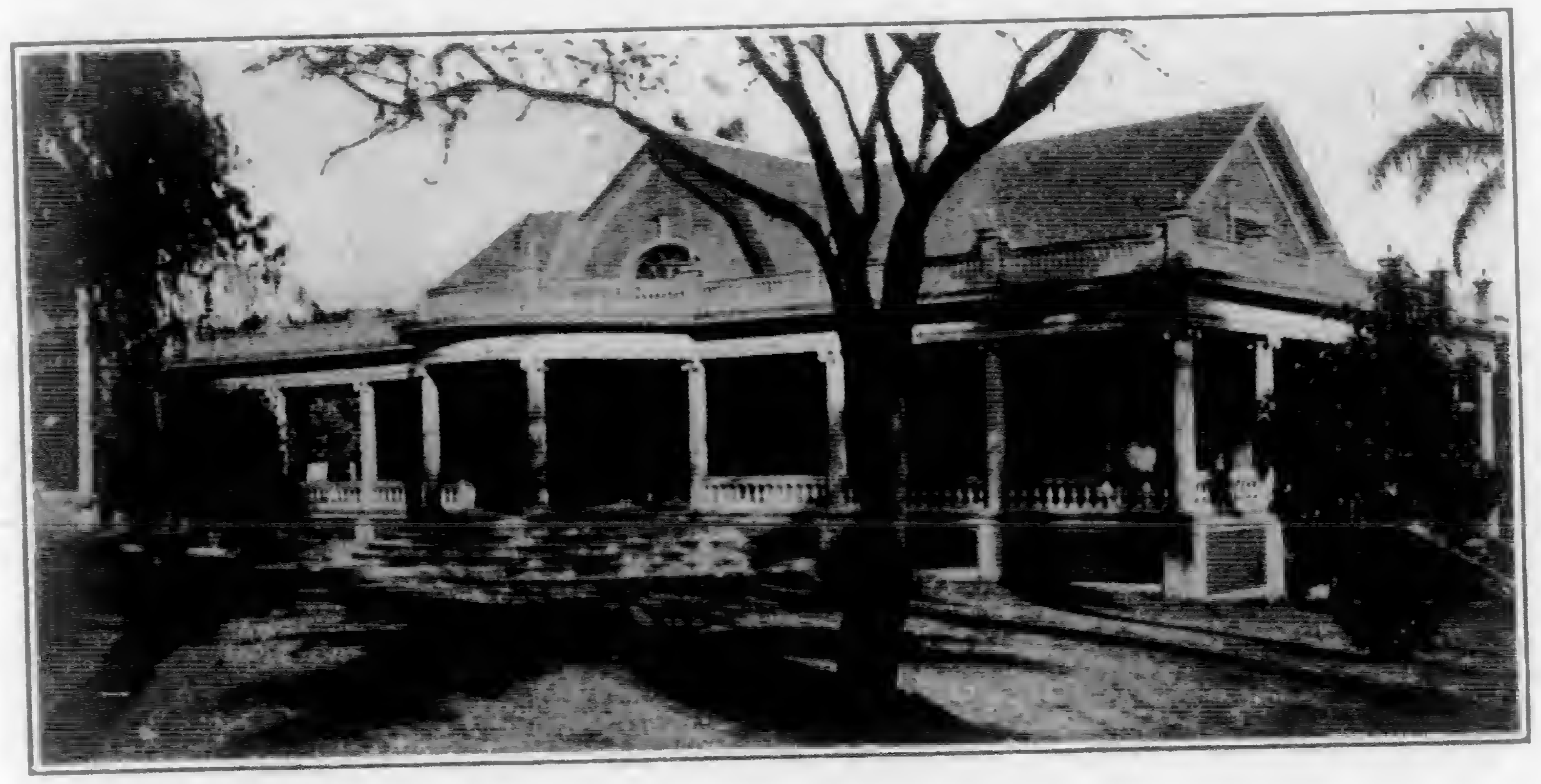
St. Clement's Episcopal Chapel, Honolulu



Living Room in Residence of W. G. Irwin, Honolulu

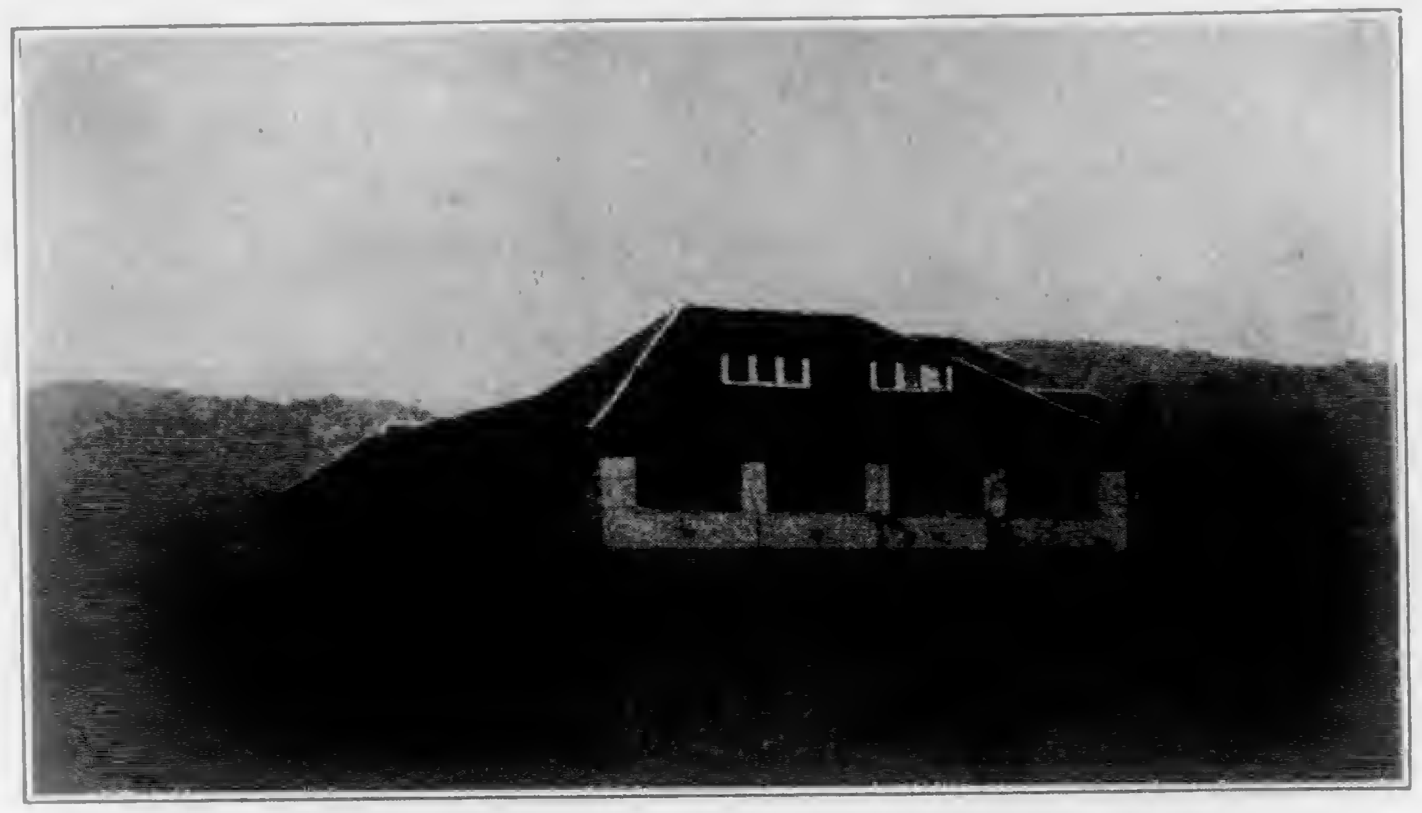


Residence of E. D. Tenney, Honolulu

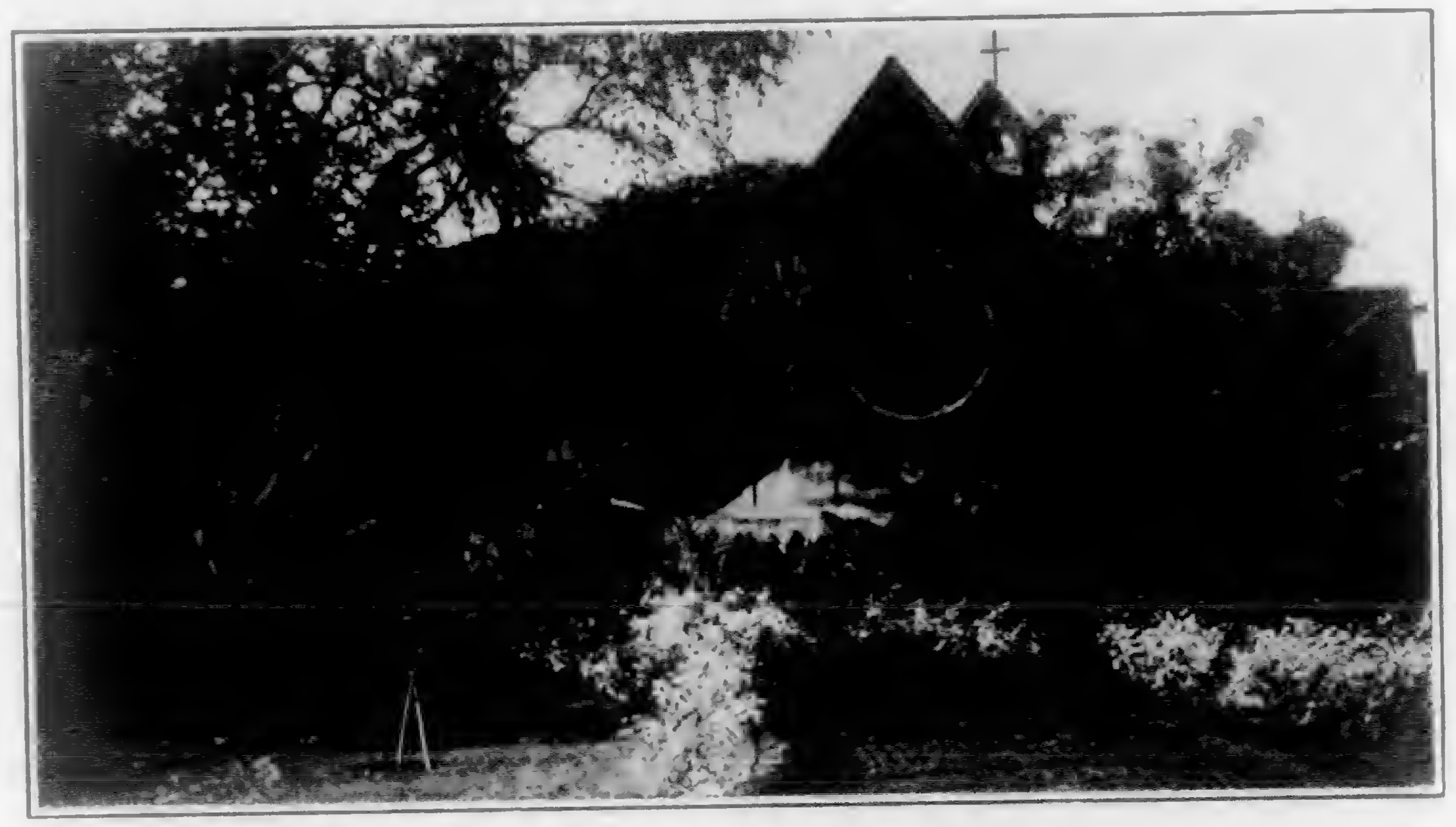


Bungalow of D. P. R. Isenberg, Honolulu

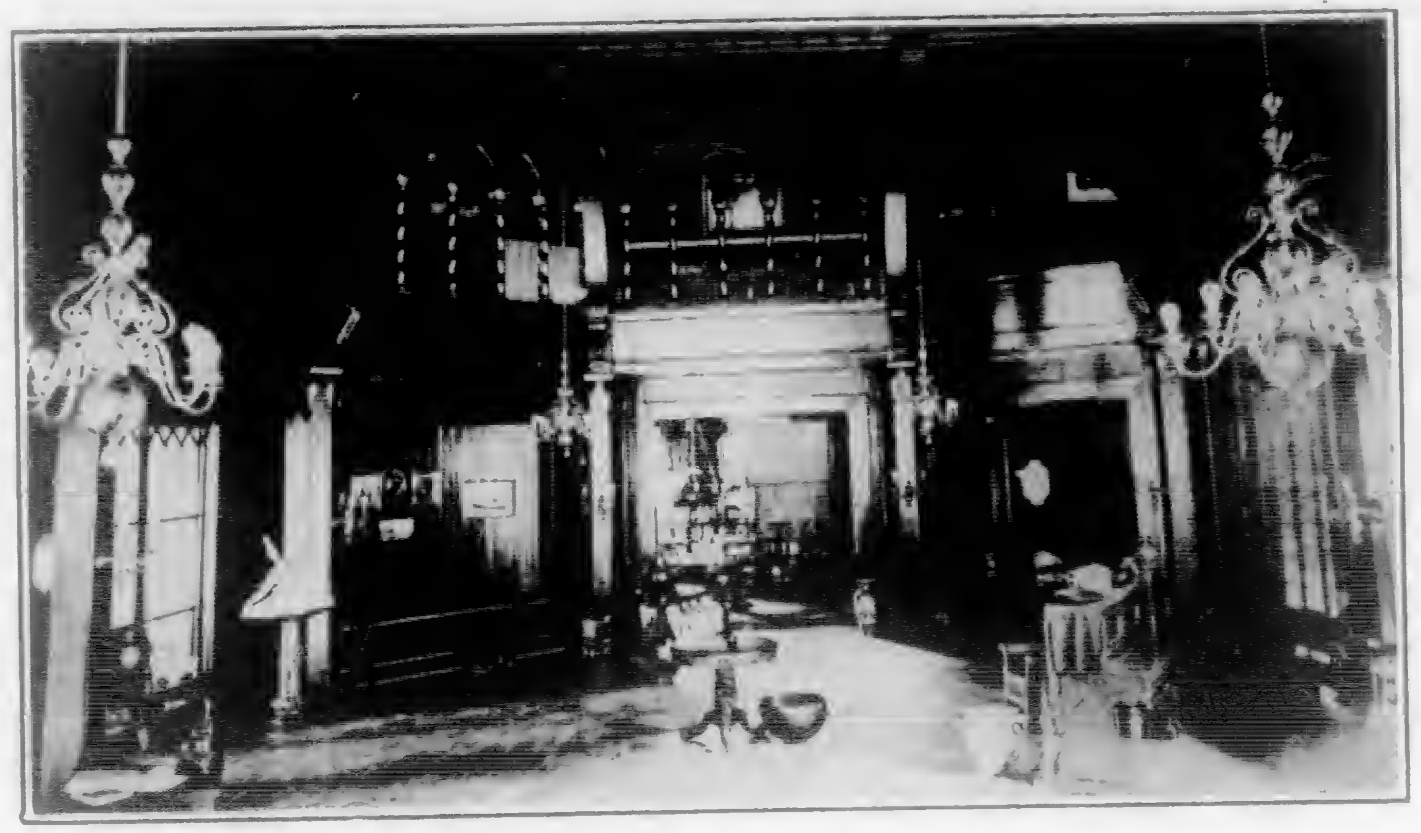
Residence of J. P. Cook, Honolulu



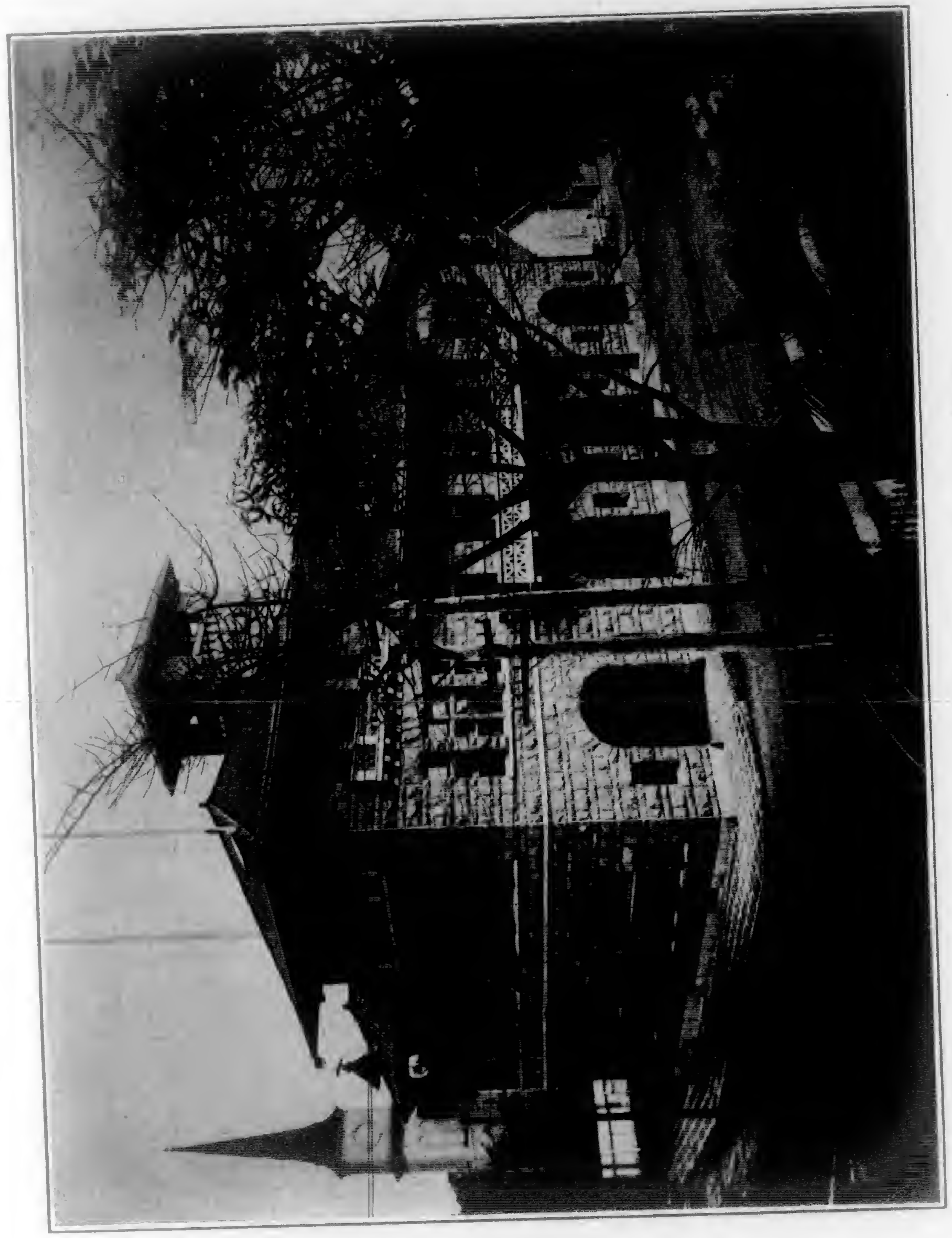
Bungalow of Henry E. Cooper, Honolulu



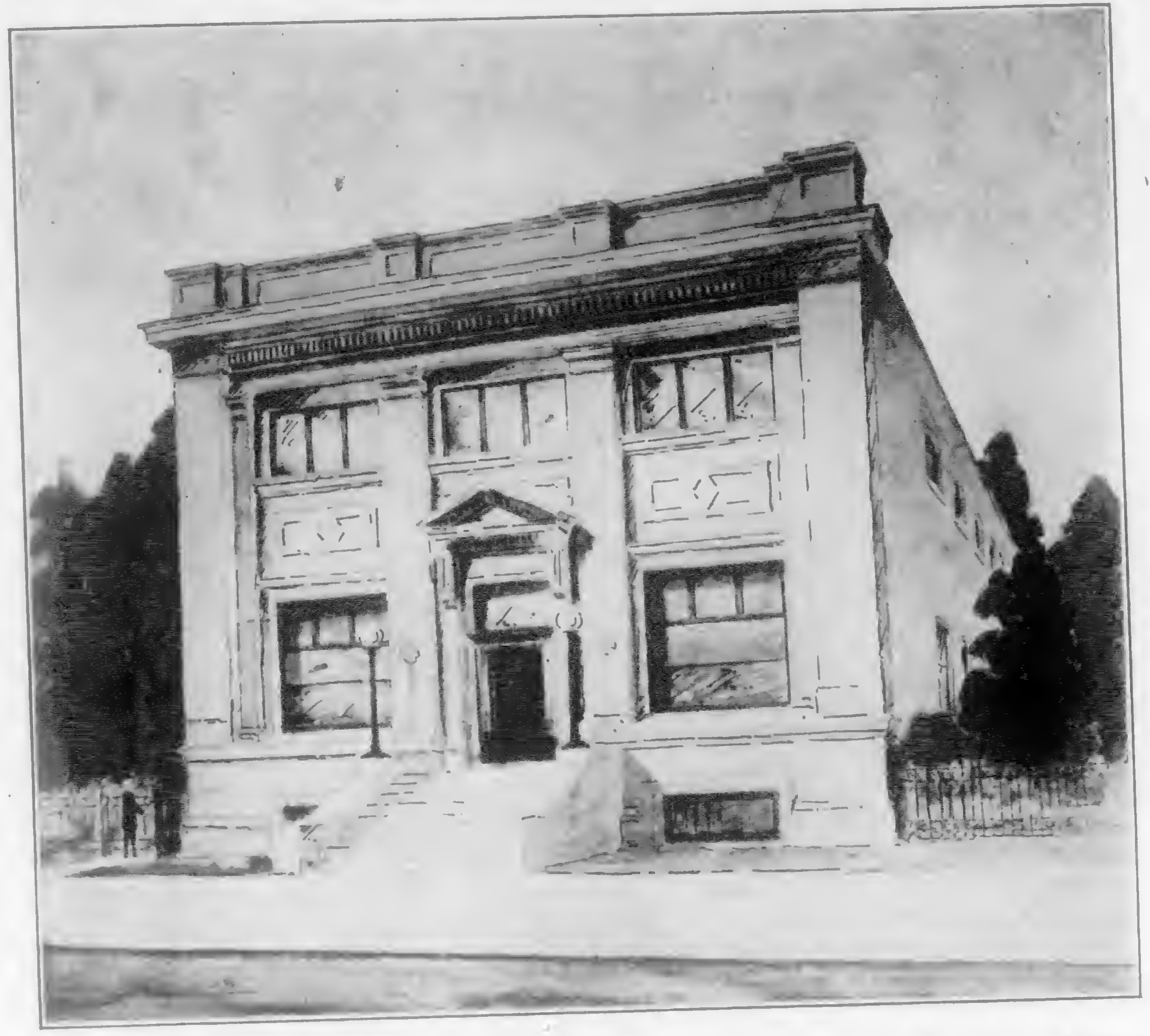
St. Clement's Episcopal Chapel, Honolulu



Living Room in Residence of W. S. Irwin, Honolulu



Central Fire Station, Honolulu.—C. W. Dickey, Architect



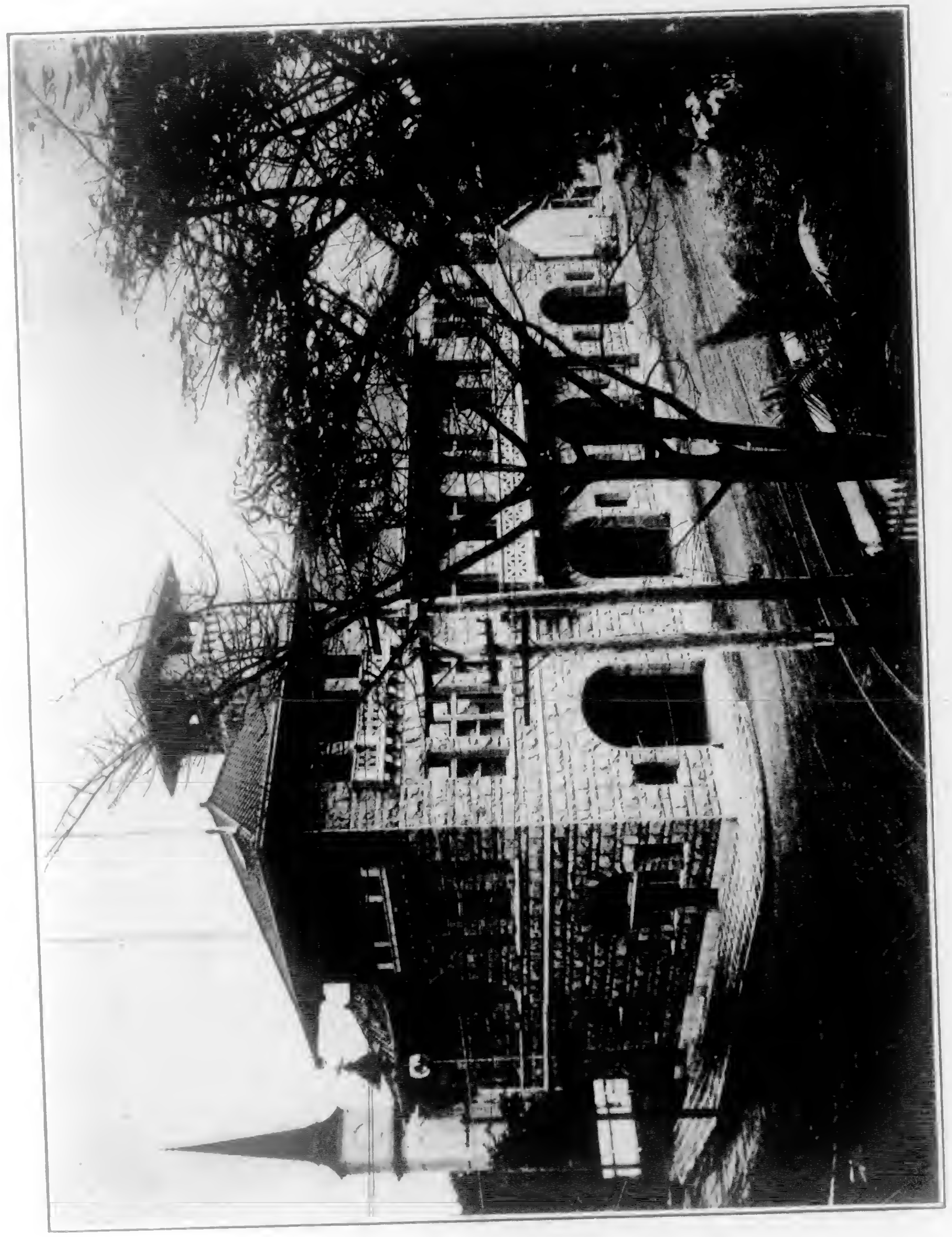
Telephone Building, Oakland C. W. Dickey, Architect

Two Substantial Oakland Buildings

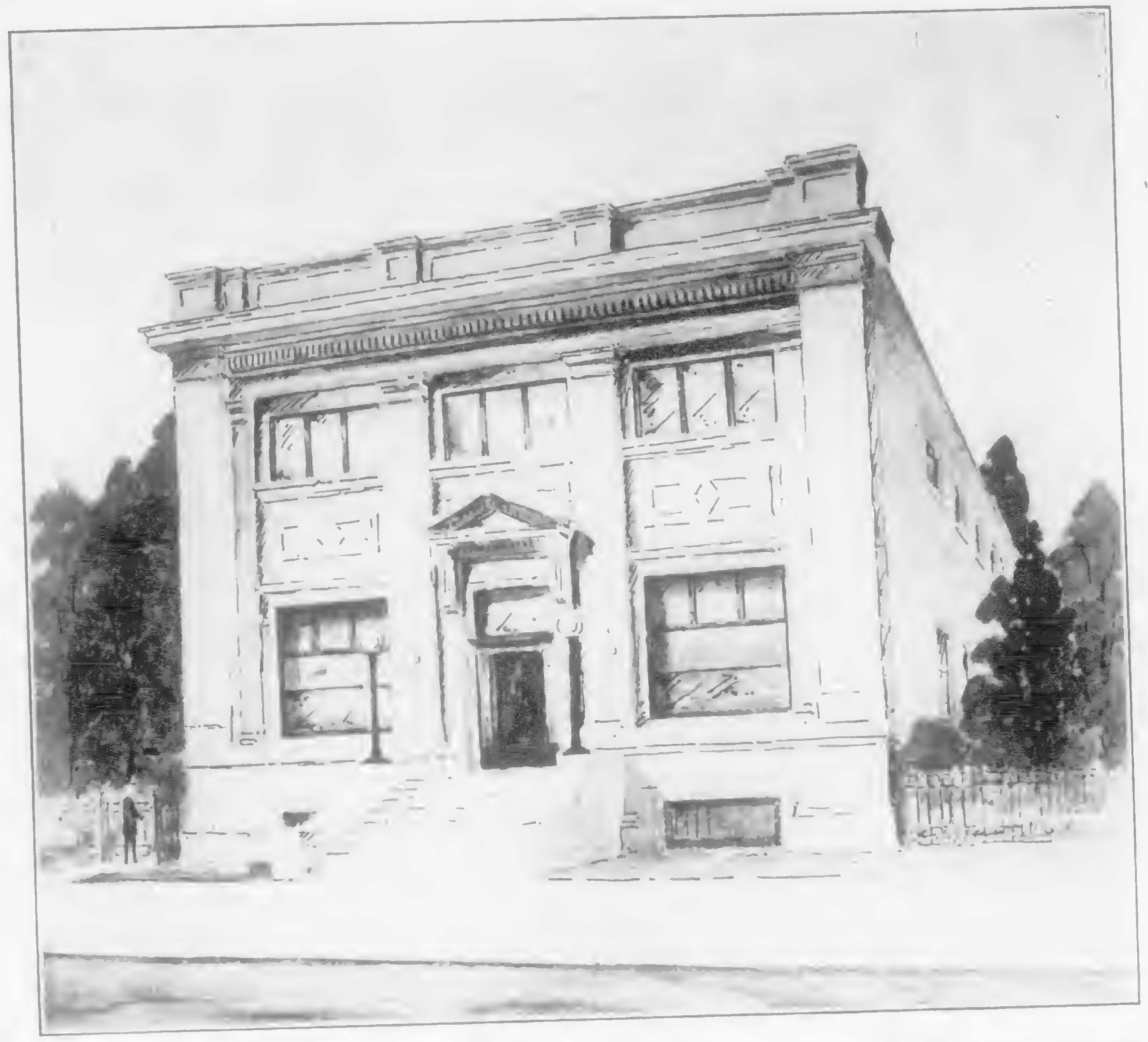
BUILDING construction in Oakland is going ahead in a most satisfactory manner, two of the most important jobs now under way being the Pacific States Telephone building at Forty-fifth and Telegraph avenue and the Taft and Pennoyer building at Fourteenth and Clay streets. The former was designed by Architect C. W .Dickey of Oakland and the last named building by Architects John Parkinson and Edwin Bergstrom of Los Angeles. The Roberts Brothers Company, contractors of Oakland, have the work well in hand on both jobs. The telephone building is expected to be ready for occupancy by the first of November or earlier. The structure is of reinforced concrete with polished wired plate glass in all the exterior windows, metal frames and sashes, metal covered doors, and in fact every modern appliance that goes to make a perfect fire-proof building. The estimated cost of the building is $49,000.

The excavating for the Taft and Pennoyer building is finished and the Roberts Brothers Company are now busy on the foundations and retaining walls. This building will cost $500,000. More then 30,000 cubic yards of soil were removed in preparing for the foundations—the largest excavation, by the way, ever made in Oakland for building purposes. A reinforced concrete basement fourteen feet in the clear will be put in, more than 4000 barrels of cement and 100 tons of steel for reinforcing being required.

The building will be four stories and basement, with a frontage on Clay street from the curb of Fourteenth street to that of Fifteenth street of 238 feet and from the curb line of Clay street to the rear of the lot on Fifteenth street 214 feet, and between the same points on the Fourteenth street frontage, 114 feet.



Central Fire Station Honolulu. C. W. Dickey, Architect



Telephone Building Oakland C. W. Dickey Architect

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The Taft and Pennoyer Building Oakland
John Parkinson and Edwin Bergstrom, Architects

The Value of Punctuality

Punctuality is a very admirable and commendable quality of character in anybody, but it is particularly so in a business man. It shows true appreciation of the value of one's own time, as well as the time of others, and bespeaks a scrupulous sense of honor and self-respect, which are very important and essential features of character in the honest business world. A man who lacks these qualities of character, to a great extent, it matters not how well he may be equipped otherwise, will not only suffer many losses in a commercial sense, but will be regarded as unreliable and unsafe in all business transactions involving large sums of money, and as untrustworthy in a moral sense, in matters pertaining to social and civic duty. Aside from these points of consideration, punctuality may involve the welfare and even the life of human beings. The many different ways in which the truth of this statement might be demonstrated, we leave entirely to the reader, with the pertinent reminder that history is full of instances that serve to justify this assertion, besides those which may have come under the reader's own personal observation, and within his own personal experience. To the employer, punctuality in the employe is one of the most admirable of all other qualities, for it tells of other qualities that generally go with it. He knows that if the employe be strictly punctual, he is most likely to be careful and conscientious in the performance of his work, and he is also likely to be diligent, and to manifest a real interest in the things that pertain to the welfare of his employer. The employer who is not punctual in the performance of his own duties is not likely to arouse the enthusiasm of his employe in this direction, and, as a consequence, his business will suffer in the matter of its management, as well as in every other department.—Hardware.

The Rebuilding of San Francisco—Reinforced Concrete Buildings

By WM. HAM. HALL, C. E

WITHIN the fiscal year ending with June, just past, the erection of seventy-eight reinforced concrete buildings has been commenced in the burned-over area of the April, 1906, San Francisco fire. This number is thought to include all of this class, except, possibly, some small ones not noticeable. It does not, of course, include steel frame buildings, having reinforced concrete parts. It is safe to say that there never before has been near as much work of this character going on in any one city at one time. Considering the fact that prior to the great earthquake and fire, reinforced concrete construction was not provided for in the San Francisco building ordinance, and that not one complete building of that class had ever been permitted here, this is a remarkable showing.

We had at the Stanford University two buildings of reinforced concrete, the Robles Hall and the main part of the Museum building. Over on the Alameda marsh there was the Borax Company's building, and in San Francisco the six-story Academy of Science, whose interior floors and balconies were of reinforced concrete anchored to brick exterior walls. These were the notable structures of this material within the range of the great earthquake.

Not one was a good example of a complete reinforced concrete building. Nevertheless, the experience of them opened the way for reinforced concrete construction where before it had been firmly closed and apparently sealed by irrevocable official, professional and trade condemnation in San Francisco.

The declared uses of these buildings, thus far started in our city, are about as varied as well could be, there being 14 intended for store purposes, 14 office buildings, 10 warehouses, 5 factories, 1 flouring mill, 3 loft buildings, 2 wholesale store buildings, 1 wholesale market, 1 store and residence structure, 7 combined store and office buildings, 4 store buildings with rooming accommodations on the upper floors, 1 store and bank, 2 office and bank, and 1 bank building, 1 apartment house, 2 rooming houses, 1 residence, 2 hotels, 1 club building, 1 sanitarium and 2 power stations.

Summarized according to stories, we have: 4 one-story, 11 two-story, 21 three-story, 8 four-story, 7 five-story, 9 six-story, 8 seven-story, 7 eight-story, 1 nine-story and 1 ten-story, and sixty-seven have basements in addition to the stories enumerated.

Thirteen or fourteen of the whole number were finished and occupied at the end of the fiscal year. Twenty-two were very nearly finished. About half a dozen had very recently been commenced, and the balance were in various intermediate stages of progress.

It is interesting to note under what business arrangements these buildings have been or are being planned and erected. For instance, nineteen of the number are planned and contracted for, on the percentage basis, by persons who act as architect, engineer and builder, all in one; there being four firms in this kind of business. Eight or ten others of the buildings are planned and erected by four or five combinations, wherein it is said that the architects are in some business way connected with the builders, employed by the month or otherwise. Four or five are built by the owners employing architects or builders by the month to plan the structure and superintend the building by day labor for them. About thirty-six to forty others bear the names of independent practicing architects who are fairly well known to the public, and seven or eight of these architects have two such buildings apiece, the balance being vouched for by a separate architect or firm to each building.

The architects most prominent before the public by reason of the notable buildings with which their names have in the past been connected, are not prominent as architects of reinforced concrete buildings. The names of not more than eight or ten such specially prominent architects appear in the list. Of these, several have two reinforced concrete buildings each, and the balance only one. Thus, the names of quite a number of the architects amongst the foremost by reason of their works in steel, stone and brick, are not found at all in the list of those who have undertaken reinforced concrete buildings thus far.

Again, we find in the list of owners of reinforced concrete buildings few or none of those who are by public repute ranked as the most extensive real estate owners and improvers of the city. Several are large owners, to be sure, but are not quite among those most noticeable by reason of the extent of their holdings, or because of reputed surplus capital for building investment.

The following is a list of the reinforced concrete buildings, built or in course of building, July 1, 1906, to July 1, 1907:

Owner.	Stories.	Dimensions.	Est. Cost.
American Biscuit Co., Battery and Broadway.	5 and Bsmt. Factory.	275x137 4th floor concreted. 5th floor forms going up.	$250,000
Adams, Mission, near 6th.	5 and Bsmt. Warehouse.	50x160 1st floor concreted. 2nd floor forms going in.	$91,000
American Chocolate Co., Bluxome, near 4th.	3 Warehouse.	50x120 Finished and occupied.	$25,100
Anglo-Cal. Bank, Mission and 16th.	4 and Bsmt. Bank and Office.	60x60 Concrete complete and stripped. Finishing inside.	$65,000
Anderson, Dr. Winslow, Sutter, near Larkin.	2 and Bsmt. Sanitorium.	50x130 Concrete complete and stripped.	$40,000
Brandenstein, Jos., 1st and Mission.	6 and Bsmt. Lofts.	55x60 Foundations going in.	$67,500
Backus, Mrs. S. W., Jones, near California.	2 and Bsmt. Residence.	32x78 Concrete complete and stripped. Finishing inside.	$10,000
Balis, Helen J., 6th, near Stevenson.	3 and Bsmt. Store.	78x22 Concrete complete and stripped. Finishing inside.	$18,500
Bernard, Mrs. N. B., Market, near Sutter.	3 and Bsmt. Mercantile.	20x76 Concrete complete and stripped.	$19,000

Owner.	Stories.	Dimensions.	Est. Cost.
Boyd, Jean McG. Estate, California and Drumm.	8 and Bsmt. Office.	70x62 Concreting roof. 6 stories stripped.	$135,000
Brynteson, E. J., Drumm and Commercial.	4 and Bsmt. Rooms.	75x30 Concreting second floor.	$30,000
Bemis Bros. Bag Co., Sansome and Green.	3 and Bsmt. Warehouse.	Finished and occupied.	$40,000
Bemis Bros. Bag Co., Sansome, near Green.	6 and Bsmt. Warehouse.	43x137 Finished and occupied.	$35,000
Boyd Estate, Pine and Battery.	8 and Bsmt. Office.	137x46 6th floor concreted. 7th story forms going in.	$175,000
Brandenstein, A. J., Spear and Mission.	5 and Bsmt. Store.	70x137 Concreting first floor.	$119,000
Bothin, H. E., Mission, nr. New Montgom'y.	6 and Bsmt. Store.	40x160 3rd floor concreted. 4th floor forms and 5th story steel going in.	$42,500
Brown, Dora C., Mission, near 6th.	7 and Bsmt. Store.	50x160 Concreting first floor.	$35,000
Baer, Jos., Folsom, near 5th.	4 Store and rooms.	90x50 4th floor concreted.	$23,000
Barron Estate Co., Geary and Taylor.	7 and Bsmt. Hotel.	137x137 7th floor concreted. Roof forms going in.	$579,000
City Electric Co., Beach and Mason.	1 Power House.	137x137	$40,000
Carpy, Chas., Montgomery and Pacific Ave.	3 and Bsmt. Office.	Finished and occupied.	$18,750
Clarke, Mrs. Charlotte S., Turk, near Larkin.	5 and Bsmt. Apartments.	137x137 Concrete complete and stripped. Finishing inside.	$140,000
Century Investment Co., Post, near Stockton.	6 and Bsmt. Office.	75x125 2nd floor concreted. Placing 3rd floor steel.	$250,000
Drexler, Mrs. Elise, Market, near Mason.	7 and Bsmt.	3rd Floor in. Awaiting owner's instructions.	$80,000
Durbrow, A. K., Front and Commercial.	6 and Bsmt.	6th floor concreted.	$60,000
Denman, Spear, near Mission.	2 and Bsmt.	91x30 Concreting second floor.	$127,500
Del Monte Milling Co., Lombard and Montgomery.	2 and 3 and Bsmt. Mill.	137x137 Roof on 2-story portion. Concreting 3rd floor on 3-story portion.	$40,000

Owner.	Stories.	Dimensions.	Est. Cost.
Freeborn Estate, Market, near Sutter.	3 and Bsmt. Store and Office. Concrete complete and stripped. Finishing inside.	34x100 27x120	$38,000
Folger Estate Co., Davis, near California.	3 and Bsmt. Warehouse. 2nd floor concreted. 3rd floor forms going in.	22x60	$50,000
Galleazzi, G., Montgomery, near Jackson.	3 and Bsmt. Store and dwelling. Finished and occupied.	22x60	$7000
Huber, Emma, Howard, near 2nd.	2 and Bsmt. Lofts. Basement concreted. 1st floor forms in. Work stopped.	25x100	$7000
Haslett Warehouse Co., Sansome and Filbert.	8 Warehouse. 3 stories concreted. 4th story forms up. Work stopped.	82x92	$30,000
Hooker Estate Co., Battery, near Bush.	4 and Bsmt. Store. Concrete complete and stripped. Finishing inside.	46x97	$39,900
Halsey, N. W. & Co., California, near Sansome.	4 and Bsmt. Office and Bank. Concrete complete and stripped. Finishing inside.	45x125	$39,950
Hopkins, Edw. M., Pine and Leidesdorff.	7 and Bsmt. Office. Building finished. Painting outside.	36x84	$80,000
Jennings, Thos., Battery and Washington.	3 and Bsmt. Store and Office. Concrete complete. Brick fire-walls building.	120x137	$50,000
Jorgensen, E. B., Kearny and Commercial.	3 and Bsmt. Office. Concrete complete and stripped. Finishing inside.	26x28	$11,000
Langley & Michaels, First and Jessie.	8 and Bsmt. Warehouse. 7 stories concreted. 6 stripped. Finishing lower stories inside.	60x130	$69,750
Legalette, Battery and Jackson.	6 and Bsmt. Warehouse. 3rd floor concreted. 4th floor forms in.	69x137	$125,000
Land, Caroline F., Bush and Sansome.	3 and Bsmt. 2nd floor concreted. 3rd floor forms up.	97x97	$70,000
Lietz, A., Commercial and Kearny.	4 and Bsmt. Factory. Concrete finished. Stripping in progress.	35x56	$25,000
Lowenberg, I., Kearny, near Post.	3 and Bsmt. Store. Finished and occupied.	22x60	$12,000
Latham, Emily K., Mission, near 4th.	6 and Bsmt. Warehouse. Concrete complete. Stripping top story.	40x160 30x160	$85,000
Marvin, S. R., Clay and Front.	7 and Bsmt. Store, Bank, etc. 3rd floor concreted. 4th floor forms in.	59x60	$55,000

Owner.	Stories.	Dimensions.	Est. Cost.
McDonough, Kearny, near Pine.	7 and Bsmt. Store and Office. Concrete complete. 5 stories stripped.	38x86	$110,000
Martin Estate, Fremont and Mission.	3 and Bsmt. Foundations only. Concreting foundations.	133x130	$4900
McLoughlin, E., Mission, near 3rd.	6 and Bsmt. Store. 3rd floor concreted. 4th floor forms going in.	88x160	$110,000
McDonough Estate Howard, near 4th.	2 and Bsmt. Office and Salesroom. 1st floor concreted. 2nd floor forms in.	75x137	$40,000
Mission Savings Bank, Valencia and 16th.	Bank. Excavation complete. Work stopped.	89x102 L 11x44	$
Mission Bank, Julian Ave. and 16th.	2 and Bsmt. Bank and Office. 2nd floor concreted. Roof forms in.	50x94	$35,700
McCone, Mrs. L., Sutter, near Polk.	2 and Bsmt. Store. Finished and occupied.	50x120	$40,000
Morgan Oyster Co., 3rd, near Brannan.	1 Business. Finished and occupied.	75x130	$9900
Nunziatto, L., & Son, Broadway, near Montgomery.	2 and Bsmt. Factory and Residence. Finished and occupied.		$15,000
Owens & Unger, Front and Broadway.	6 and Bsmt. Warehouse. First floor concreted. Part of 1st story forms and 2nd floor in. Work stopped.	127x137	$125,000
Olympic Club, Post, near Taylor.	Club House and Swimming Tank. Concrete complete. Temporary building over it.	137x137	$
Peiser, Co., 6th, near Stevenson.	3 and Bsmt. Store and rooms. Finished and occupied.	22x78	$22,200
Pacific Co., 4th and Market.	9 and Bsmt. Office. Concrete complete. 7 stories stripped.	195x145	$450,000
Phelan, Mary L., Drumm and Washington.	2 Warehouse. Finished and occupied.	59x75	$17,000
Pond, E. B., New Anthony and Mission.	5 and Bsmt. Office and Store. Concreting 5th floor.	68x187	$124,500.
Pacific Cereal Co., Bay and Taylor.	4 and Bsmt. 4th floor concreted. Roof forms in.	48x100	$50,000
Rosenstirn, Dr. Julius. Sutter and Hyde.	10 and Bsmt. Hotel. 4th floor concreted. 5th floor forms going in.	117x77	$250,000
Santa Marina Co., California and Drumm.	8 and Bsmt. Store and Office. Concreting 8th floor. 5 stories stripped.	92x137	$430,000

Owner.	Stories.	Dimensions.	Est. Cost.
Sheldon, Mark, Co.. 1st and Market.	8 and Bsmt. Store and Office.	91x137 Concreting 4th floor.	$375,000
Scatena, L., Clay and Sansome.	3 and Bsmt. Store.	92x73 Concrete complete. 1 story stripped.	$30,000
Schweitzer & Bauer, Sacramento, near Kearny.	3 and Bsmt. Office.	34x119 1st floor concreted. 2nd floor forms in.	$30,000
Swett Co., Mission, near 4th.	5 and Bsmt. Factory.	160x37 3rd floor concreted. 4th floor forms going up.	$50,000
Schiff, Mrs. Henrietta, Howard, near 6th.	3 and Bsmt. Store.	25x75 Concrete complete and stripped.	$14,000
Shaefer, August, Howard, near 3rd.	4 and Bsmt. Store and Rooms.	40x80 Concrete complete and stripped.	$30,000
Schilling Co., Folsom and 2nd.	2 and Bsmt. 3 and Bsmt. Factory.	Finished and occupied.	$250,000
S. F. Gas & Electric Co., Bush, near Larkin.	1 Power House.	25x120 Finished and occupied.	$15,000
Troy, R. P.,	1 Stores.	Finished and occupied.	$3600
Viavi, Pine, near Grant Ave.	5 and Bsmt. Laboratory.	155x200 Concrete completed and stripped. Finishing in progress.	$50,000
Voorman, F. J., Jackson, near Stockton.	3 and Bsmt. Rooms.	29x137 Concrete complete and stripped. Finishing inside.	$35,000
Voorhies, Mrs. A. B., Van Ness and Fern.	7 and Bsmt. Offices.	26x84 49x84 First floor concreted. Placing 2nd floor steel.	$95,000
Wilson, Market, near 6th.	7 and Bsmt.	170x49 Concreting 2nd floor. 2nd story forms going up.	$80,000
West. Bank Co., Ellis and Market.	8 and Bsmt. Office.	159x93 129x93 Foundation concreted. 1st floor forms going in.	$200,000
Wellman & Peck, East, near Pacific.	3 and Bsmt. Wholesale Store.	160x137 3 stories of N. ½ finished and occupied. 3rd story forms of S. ½ going up.	$85,000
Western Meat Co., Townsend and 6th.	2 Wholesale Market.	137x275 Concreting 2nd floor.	$80,000
Younger, Mrs. Maud, Powell, near Eddy.	9 and Bsmt. Office.	1st floor concreted. Part of 2nd floor forms and steel in. Work stopped.	$

Data for the foregoing tabulation were taken from the records of building permits in the office of the Board of Public Works and from published building notices, and have in a number of cases been verified by inquiry from architects of the several buildings. The notes as to condition or stage of progress of building have been made from special field inspection, under my own direction.

The classification or declared purpose of building evidently does not in all cases convey the full information. The dimensions in some cases do not allow for irregularities of outline. The estimated costs in a number of cases apparently are not fairly comparable with others.

The total of estimated costs noted above, is $6,177,250, covering seventy-six buildings. The average height of these buildings is about four and one-half stories, not including basements, about 330 stories, or 397 floors, all told. The sum of their superficial areas is approximately 671,000 square feet, or about 2,800,000 square feet of floor area, covering wall and column space, but not including basement floors.

The figures are yet subject to so many corrections and are so incomplete on point of height and consequent cubic content of structures, that no attempt is now made to deduce average unit costs as estimated. The table will be republished in more complete and useful form later.

* * *

Supreme Court Decides Contractor Must Follow Architect's Specifications

AN INTERESTING decision by the Supreme Court of the State of New York has recently been announced in a suit brought by a contractor and defended on the ground of failure to obey the specifications. In the particular case in question the architect specified the use of a certain braided cotton sash cord, but the contractor substituted something else which he considered "just as good," on the ground that he had never heard of the article in question. In deciding the case the court ruled as follows:

We have set forth some specimens out of more than twenty admitted failures to comply with the specifications and at the same time have given in substance the reasons of the contractor for the omissions. The contract was not substantially performed in all respects, and there is no evidence to support the finding of the trial court that it was. There is no substantial performance when no attempt is made to comply with certain express requirements of the specifications and no excuse or explanation is given for the failure. A contract is not substantially performed by substituting for that which is expressly required, materials, methods of workmanship which, in the opinion of the contractor and his experts, are "just as good," unless the substitution relates to a matter of minor importance, is made in good faith and for sufficient reasons, and there is an adequate allowance for the difference. The owner has a right to what the contractor agreed to give him, and unless he has it, or when the failure is neither willful nor substantial, is fully compensated for the omission, there is no substantial performance and there can be no recovery. It is not sufficient for the contractor to build a house, but he must build the house contracted for, and substantially comply with the specifications as to the method of construction, materials and workmanship before he is entitled to payment.

In the case last cited, we said: "The contractor may not deliberately violate his contract by the use of earthen construction instead of iron and small pipes instead of large ones, and yet claim that he has done as he agreed because the result is just as good. Unless the owner had the right to contract for what he wanted and to get what he contracted for, there was no use in making the contract. A building contract, like any other, is to fairly perform according to its terms, and any substantial change, unless authorized by the owner or architect, is made at the risk of the contractor. In order to avoid injustice the law tolerates unsubstantial deviations made in good faith, but it exacts full compensation therefor, and permits a recovery on the theory of substantial performance only after the proper deductions have been made. The contractor had no right to substitute his own judgment for the stipulations of the contract, or to recover on the basis of complete performance, when . . . he willfully and intentionally used inferior and less expensive materials in the place of those agreed upon."

* * *

Sandstone the Poorest Building Material Available

OUR attention was called a short time since to the remains of what had once been a house dating from the Colonial period. The chimneys had been built supposedly of very excellent brick and their remains had been lying exposed to the weather throughout the whole winter and were now in such condition that hardly a single piece of burnt clay was intact. The query was raised, why brick should disintegrate, and that brought out the very commonly heard statement that our questioner assumed all bricks were alike and that almost any brick is fit to use in a building if laid up properly. It is never safe to assume that brick is enduring and suitable for building operations unless we know its composition. The most potent factor which must be guarded against is the presence of salts of magnesia. It is only a question of time when brick in which these salts are present in any appreciable quantity will be badly influenced by the weather, and we have seen brick which, when fresh from the kiln, gave every mechanical evidence of being of best quality, so shattered and disintegrated by the combined effect of moisture, frost, and the chemical action of the magnesia, that a knife could be thrust straight into the heart of the brick with very little effort. Fortunately, there is so much good clay in this country and so many thoroughly reliable brick manufacturers that there is really no excuse for bad brick ever being used, but any brick is not necessarily, therefore, good brick, and care and intelligent discretion must be used in the employment of this material as it should be used in connection with any building medium.

There is a common conception that granite is one of the most enduring stones, but it certainly is not so in our climate, and as a matter of fact most granites would be outlived by thoroughly first quality hard burned brick. A pure syenite, free from iron or mica, constitutes the most enduring of the granites. A granite quarry may have good stone in some portions of the deposit and be utterly worthless in others, and as a general rule it is not safe to use a granite unless the architect knows absolutely its composition and the part of the quarry from which it is taken.

Sandstones, which were formerly so much used in the East, are really the poorest building material in the market. The cementing material in sandstone has a very slight value, and it is probably the poorest material extensively used, as far as resisting the action of frost is concerned, while the presence of iron constitutes an almost fatal defect. It may be said also that very little sandstone is free from iron.—The Brickbuilder.

Owners Blamed for Poor Construction

Architects, as a Rule, Recommend Fireproof Materials but Increased Expense Frightens the Builder

SEVERE criticism of the lack of fireproof qualities in modern buildings is contained in the combined reports just submitted to the United States Geological Survey by Professor Frank Soule, Dean of the College of Civil Engineering in the University of California, Captain John Stephen Sewell, Engineer Corps, U. S. A., and Richard L. Humphrey, expert in charge of the Structural Materials Division of the Technologic Branch of the Geological Survey and secretary of the National Advisory Board on Fuels and Structural Materials.

These experts a short time age completed a study of the condition of the buildings of San Francisco following the earthquake of April 18, 1906, and the fire which followed. They reached the conclusions that the lessons from the Chicago and Baltimore fires have not yet been learned and that a great conflagration with its attendant loss of life and millions of dollars in property is possible in every big city of the country.

Professor Frank Soule, after giving the details of his investigation, sums up the situation in the following language: "The failure of fireproofing methods in San Francisco is directly traceable to the commands of the owners to their architects to cheapen as far as practicable, the fireproofing and the construction generally, in order to secure greater interest on their investments. This cheapening has often occurred in spite of the protests of the designers and it is in an entirely wrong direction; for rates of insurance are largely reduced with improvements in fireproofing; and as the cost of the steel frame and its proper fireproofing seldom exceeds 27 per cent of the cost of the building, it seems wise to protect the other 73 per cent with adequate materials.

"In some instances in San Francisco, brick laid in rich Portland cement mortar has been found to be excellent fireproof covering. Good brick has withstood well the severe fire, and when laid in good cement, has afforded a strong fireproof wall or pier. At least four inches in brick was found necessary, and a layer of concrete three inches in thickness between that and the steel was a great improvement and served well to protect the latter from rust. But this method will probably not be followed in general, on account of weight, bulk and expense. Hollow brick and tiling was efficient also when properly and liberally used as well as correctly applied on a good system. It has fireproofed satisfactorily; porous tiles proving to be the better.

"In a country subject to earthquakes, a strongly-framed and well-founded wooden house, two, or at most, three stories in height, with non-disintegrating plaster and finish, light tile chimneys and ample fire prevention and protection is the ideal type of residence structure.

"The high steel-frame office buildings have shown that in order to resist perfectly the bending movements and shears induced by the swaying due to earthquake movement, such buildings should be stiffened in their joints and connections by the best riveting combinations and knee and other bracing, particularly at or near the ground floor.

"Columns, exterior and interior, should be put in more liberally in future, upon the first and second stories, and the strongest joints and connections should be adopted in order to resist the bending and shearing. With such strengthening the high steel structures will safely endure an earthquake of even greater severity than that of April 18, 1906. This kind of building has proved its worth and reliability and has 'come to stay'. It has been tried and has not been found wanting. Minor improvements, as advocated, will produce a perfect structure.

"Concrete and reinforced concrete have become popular for construction with a large number of designers in San Francisco, on account of the claimed strength, indestructibility, facility of use, and fire and rust protection their materials afford. Unfortunately for San Francisco, there were few structures of concrete or reinforced concrete in the city at the time of her great trial; but these few behaved well during both the earthquake and the resulting fire.

"Therefore, although such structures are admittedly new and comparatively experimental on the Pacific Coast, the confidence reposed in them has already led to the designing of a number of large buildings of this type for public or business purposes.

"At present the sentiment is to limit them to a height of six or eight stories, on account of their experimental character and because of the fear that greater height would permit a reversal of stress, due to 'quake and wind force in the reinforced girders.

"Mill construction with brick will undoubtedly be utilized in many instances for a considerable time to come, but the lesson taught us should be learned, that the materials used should be first-class pressed-brick, well-wetted, and cement mortar, and that all parts should be thoroughly tied and anchored together. This rule has been found by our experience to be a most important one to follow, in all brick and stone construction, and its neglect in the past has resulted in much loss and ruin.

"The damage inflicted upon San Francisco from the direct and immediate effect of the earthquake was relatively small, bieng estimated at from 3 to 10 per cent only of the total loss; but the subsequent and indirect effect was to paralyze the water supply and its distributing system, start a great conflagration, render impossible its extinguishment with the means at hand, cause the death of at least 500 human beings, burn approximately $500,000,000 worth of property, render houseless, homeless and miserable, 200,000 people, and inflict remoter damages to business, commerce and labor, only to be estimated in the future. When we can see plainly, as we may, looking backward, that nearly all of this destruction and suffering might have been prevented by wise foresight and provision, we feel that we must send a warning to all the cities of the world. Any city that disregards this warning will be guilty of a great crime.

"Of a building's entire fire damage, the risk from fire within the building is estimated, on the average, at 40 per cent, the other 60 per cent of the risk being from the exterior of the building. This risk for interior fires should be reduced to a minimum by ample provision for fire prevention. As far as practicable, the absence of combustible material should be secured.

"While the danger from exterior fires to a given building is ordinarily estimated at 60 per cent, it practically becomes 100 per cent in case of a great conflagration. In San Francisco, little protection from exterior fires has been adopted. Many of the best buildings, had they been furnished with metallic shutters of the best design, with wire-glass in metal sashes, and with cornice and other exterior sprinklers, supplied by a private water plant, certainly might have been saved.

"San Francisco's experience recommends that wells and elevator shafts, running up through many stories, should be guarded by brick or reinforced concrete walls, fitted with double metal rolling doors, bolted to the walls to allow the expansion; or with automatic sliding doors and wire-glass partitions.

"The importance and value of real protection will be appreciated when it is stated that a third-class building, with such complete fire-prevention plant, is insured for less than a first-class one, not having it. This lesson is one that should be taught to all capitalist owners by their architects and engineers. Moreover, all parts of an establishment should be equally protected, for the fire may begin anywhere.

"Concrete floors with metallic mesh reinforcement are strongly recommended for strength and fire proof character.

"A non-inflammable substitute for wood work and trim generally is greatly to be desired.

"Double windows of wire-glass in hollow metallic frames are recommended; or where such material would be objectionable by cutting off the view, double plate glass is considered next best.

"Interior doors should be of metal, or at any rate metal covered, in fire-proof buildings and the light for corridors and halls should come through wire glass.

"As the installation of wire-glass, metallic rolling shutters and metal sash is only a small percentage of the cost of the building, and has proved to be such excellent fire protection, when of the best material and workmanship, a wise economy demands its use in every important fireproof building. Capitalists and owners must understand that perfect fire protection for structural steel is necessarily expensive. Any so-called fireproofing that is cheap or flimsy is a delusion and will not serve. The application of an effective method insures permanence of the structure and at the same time is a reducer of the rates of insurance.

"Steel columns may be well fireproofed by surrounding them with four inch thickness of the best quality of stone or cinder concrete, or by three inch thickness of either, when hollow tiling is put upon the exterior.

"Three-inch porous terra cotta tiling, wrapped on the outside with wire, and metal mesh used around the bed course of the column, has proved efficient. The mortar of the tiles should contain a large percentage of cement, and they should be strongly anchored to the columns to prevent their falling away in earthquake or fire and so leaving the steel exposed.

"In the great fire, decorations, trim, inflammable oil paints and varnishes, in office buildings aided materially in spreading the flames. A water color paint has been recommended that will endure washing and is non-inflammable.

"Fire walls of brick, extending up above the roofs of buildings were effective in resisting the spread of the fire; but the support derived from metal bands and anchors was often neglected, like much other masonry in San Francisco, and such walls therefore fell, in many instances, both during the earthquake and the fire, particurlarly when laid in common mortar.

"Cast iron columns, in many buildings, endured the 'quake and the fire quite well, but undoubtedly would have been broken or shattered had cold water been thrown upon them in the midst of the great heat.

"Structures made of concrete blocks were usually greatly damaged or even ruined by the earthquake, owing to imperfect anchorage and failure to cohere at their joints.

"Granite, sandstone and marble were badly cracked and spalled by the fire, the latter stone often crumbling to powder.

Final Conclusions

"A proper foundation, stable and firm, is of vital importance, and particularly in the case of soft, marshy or made ground. Anchorage, bonding and trying of all masonry should be strictly practiced. Steel framing should be made heavier rather than lighter, and joints, connections, bracing and flooring, should be strongly united. Girders and columns should be made very stiff, and, where practicable, continuous. Fireproofing should be of the most perfect type, and no reasonable expense should be spared in its installation.

"The lessons taught by the great fires of Boston, Chicago and Baltimore have been verified in San Francisco's experience. In addition to these lessons, the following conclusions may be drawn: (a) Roofs, roof appurtenances and skylights should be given ample protection against fires from without; (b) A great excess of fire hose and apparatus beyond ordinary needs, should be available. (c) A strong bond for fireproofing tiling, etc., both for girder and column protection is essential. (d) Protection for front windows as well as for side and rear ones, is of vital importance. (e) Good protection for steel frames and steel roof trusses in attics or the exposed or unusual places should be provided. (f) Liberal use should be made of fire retardent in windows and door transoms. (g) Wise and liberal use of concrete and reinforced concrete for girder and column fireproofing has proved itself saving quality. (h) Interior fire protection and prevention by wells, pumps, sprinklers and water tanks vastly lessen fire-risk."

Captain Sewell also places himself on record in favor of the steel frame type of construction for tall buildings, but it should be thoroughly braced.

"In my judgment," continues Captain Sewell, "to secure the best results, the steel construction should also be inclosed with walls of reinforced concrete. The proper artistic treatment of this material would seem to be a very important problem for the architects in a place like San Francisco. Its great utility in earthquake shocks cannot be denied. Where steel frame buildings are to be finished with ordinary masonry walls, however, complete bonding of all face bricks with full header courses should be absolutely required; no other form of bond is adequate. Nothing but Portland cement mortar should be allowed in any portion of the structure. The masonry should be tied to the steel frame in the very best possible way, and much more securely than is ordinarily the case.

"For buildings of moderate height, say up to 125 feet as an extreme limit, reinforced concrete alone can undoubtedly be so designed as to give very good results when subjected to either earthquake or fire. But the bracing of a reinforced concrete building of any height, to resist earthquake, is a matter for serious study. The problem can be solved, but it has not been solved as yet. Any building of considerable height in an earthquake country should have as little mass in the superstructure as possible.

"For the ordinary commercial building where brick walls and wooden joists would ordinarily be used, I am of the opinion that reinforced concrete is the safest and most practicable solution in a place like San Francisco.

"Where reinforced concrete is used throughout, whether the building is very tall or not, great care should be taken with the design and execution of the connections between columns and members of the floor system. There should be heavy knee braces for the connection of all girders and beams, and, wherever possible, portal bracing in the shape of reinforced concrete arches should be introduced. Of course the amount of this work that needs to be done depends upon the circumstances in each individual case, such as the height of the building, its horizontal area, the kind of material, the dead weight in the upper stories, etc.

"It seems justifiable to conclude that a solid monolithic concrete structure of any sort is secure against damage in an earthquake country, unless it should happen to lie across the slip.

"The Baltimore and the San Francisco fires, as well as many other fires and fire tests, have proven conclusively that commercial methods of fireproofing are inadequate to stand any real test. In the majority of cases, the steelwork is fairly well protected, but the number of failures is sufficiently great to show that the factor of safety against fire is not by any means what it should be.

"For the protective covering itself to suffer complete destruction, or almost complete destruction, in any one fire, is in itself a failure, because, if it is brought to any such pass, the steelwork is very near destruction and the margin of safety is altogether too small.

"In my judgment, columns should be covered either with four inches of brickwork, laid in Portland cement mortar, and with all the interior space filled with concrete, or else they should be enclosed in an expanded metal basket and the entire interior filled with concrete, so that the minimum thickness of the concrete shall not, in any case, be less than four inches. Exposed flanges of girders should be protected by the equivalent of from one and one-half inches to two and a half inches of solid porous terra cotta, according to circumstances. If concrete is to be used, its thickness should be increased by about half an inch.

"The protection for low flanges should always be inclosed in a basket of expanded metal or heavy lath wire, securely anchored into the side protection of the webs. The San Francisco fire showed that, even in a hot fire, such metal mesh basket work will largely retain its tensile strength, and thus hold in position the fireproof covering inside of it, even though the latter should be shattered by expansion stresses, or otherwise, The webs of girders should be covered by four inches of brickwork or concrete, built up on the lower flanges. Girders should be completely covered from bottom to top before the floor systems are put in, so that the collapse of the latter will not expose the girder. Floor beams should have solid, protecting skewbacks, not less than one and one-half inches thick, or be covered with at least two inches of concrete. In important work, the protection of their lower flanges should also be encased in expanded metal or wire lath. The furred ceilings so much used in San Francisco are a valuable addition to the fire-resisting qualities of the floor construction, and if the furring rods were more firmly secured, the total loss here, as a rule, would be measured by the value of the plaster alone.

"Hollow tile partitions should never be less than six inches thick.

"The results at Baltimore and San Francisco did not, by any means, indicate that either hollow tile or concrete is altogether a failure or altogether a success. Both fires indicated very clearly that commercial methods of applying both materials are inadequate; both also indicated very clearly that successful results can be attained with both materials.

"A conflagration never yields comparative results, but from such results as are available, I think there is no question that the best fire-resisting material available at the present time is the right kind of burned clay. By the right kind of burned clay is meant a good, tough, refractory clay, almost as refractory as fire clay, made into proper shapes and properly burned. Some commercial hollow tile work is made of good material, but as a rule, that is the only good thing that can be said about it. As for concrete, there can be no question that good clinker concrete, made of well-burned clinkers, Portland cement and sand is a very efficient fire-resisting material. It is better than anything else except the better types of burned clay products, but the form in which cinder concrete is commercially applied is, on the whole, no better than the flimsy hollow tile work with which it competes; in fact, it is not certain that it may not be worse.

"If a hollow tile floor, for instance, loses its lower webs, the damage is very apparent, yet in the majority of cases, the floor remains true and capable of carrying considerable loads. Very often a cinder concrete floor which is even more seriously damaged, remains true, for the reason that the fire which damaged it, also removed its superimposed load before the damage was fully accomplished. A hollow tile which comes through a fire in which its temperature has exceeded 700 or 800 degrees Fahrenheit is inevitably damaged in all cases, owing to the dehydration of the cement, though it may seem undamaged to the casual observer. This property of concrete of maintaining a good face in spite of very real and very serious damage, is likely to lead the laymen into very dangerous conclusions. Consequently, this property of concrete construction may lead to equally dangerous practice. Inasmuch as concrete is inevitably damaged to a greater or less extent by the application of a high temperature, it would seem that, in all cases where reinforced concrete floor construction is used, a furred ceiling below it should be absolutely required.

"It should be added that attic floors and roofs should be as carefully designed to resist fire as any other part of the building. This is a thing that has rarely been done, and the experience of Baltimore and San Francisco show that it is absolutely necessary.

"While there is no doubt that commercial standards of fireproofing are dangerously inadequate, the greatest trouble of all is the fact that so little attention is paid to protecting the exterior openings in a building.

"In my judgment, windows protected in the following way, even without sprinklers, might keep out the fire, even though the building were shut up and abandoned.

"Protect the outer opening with some form of rolling steel shutter, or preferably, with a shutter composed of sheets of steel sliding in very deep rebates by means of angle irons or rivets, driven so as to interlock with a bead to be placed in position after the sheet of steel is itself in position. By providing a pocket in the masonry just above the window head and making these shutters in three or four parts, overlapping and interlocking at the overlap, the whole shutter could be slid up into the wall practically out of sight. This would necessitate window openings slightly lower than those often used in commercial buildings, but the loss of light would not be very serious. Make the windows entirely of wire glass, sheet metal, or metal-covered sash, hung in metal, or metal-covered frames. On the inside of the window, use a sliding shutter, either of wood, covered with sheet metal, or else, of sheet metal such as that for the outside."

In summing up his views on the situation, Richard L. Humphrey says: "The San Francisco disaster demonstrated that the lessons from the Chicago and Baltimore fires are still unlearned. The same faults in construction continue to be repeated. The only sure way to remedy grave defects of this character is to enact strict building laws which will compel an observance of the essentials for fireproof structures.

"Large conflagrations demonstrate that there is no such thing as a fire-proof building. To label one as such is bad practice, since it gives a false sense of security and causes a relaxing of necessary precautions.

"The lessons taught by the great calamities such as have befallen San Francisco, Baltimore and other cities, are not regarded. It is quite probable that the new San Francisco will to a large extent be a duplicate of the former city in previous defects of construction. The defects of construction which are so strongly condemned by reason of their failure are no worse than those generally practiced throughout the United States. The same defects are common and it is evident that the same results would follow an earthquake of equal intensity in another part of the country. A moment's consideration will show that the loss of life and property in New York, for example, under similar conditions, would be enormous. The damage to property in San Francisco is estimated at $250,000,000, but this sum, large as it is, is exceeded by the total expenditures for new construction in New York.

"In three days, the tremendous area of over 2593 acres was burned, destroying entirely 490 city blocks, and in part, 32 blocks. Of this 314 acres comprised the congested district, on which there was $250,000,000 insurance, probably representing a value of $500,000,000.

"In the Baltimore fire 1343 buildings were destroyed, having an assessed value of $12,908,300. In two years these burned buildings were replaced by 570 buildings, whose assessed value is $20,000,000. These new buildings are larger than the old, and the widening of the streets has eliminated 700 building lots. It is expected that when the reconstruction within the burned district is complete, there will be less than 800 buildings, of which the assessed value will be fully $25,000,000.

"It is therefore quite reasonable to suppose that the assessed value of the reconstructed San Francisco will be at least double that at the time of the catastrophe.

"While reinforced concrete structures were few in the zone of seismic disturbances, these stood the test in a highly satisfactory manner. Rigidity and stiffness, and a high fire resistance, which are inherent qualities of concrete, demonstrated how admirably it is suited to resist this extraordinary test.

"It is evident that in earthquake countries, water supply pipes at least should be so laid as to avoid the action of slips, settlements or ground movements of all kinds. The pipe lines should also be arranged with gates and by-passes, making it possible to cut out that portion of the system which is crippled. There should also be some means of preventing the loss of water which is occasioned by breaks in the house service pipes. The early failure of the water mains rendered the city helpless and placed it at the mercy of the flames, the fury of which for three days threatened to complete one of the greatest disasters of recent years and to obliterate one of the most beautiful cities. It was finally checked by a combined influence of a change in the direction of the wind and a wide avenue.

"For a proper earthquake-proof structure, everything—the design, the materials used, and the workmanship—must be first-class. Most of the failures resulted from bad design and poor workmanship, and in some cases, poor materials.

"The causes of the failures in San Francisco may be summarized as follows; First, dishonest design and construction, especially as regards municipal, county and state institutions. Second, an effort, on the part of those qualified to design, and advise on building construction, to meet the owners' demands and erect structures for the least possible cost, which tends to a departure from the principles of correct design; the result is a structure that will carry ordinary loads, but that fails when subjected to unusual conditions.

"While two of the five sections into which the congested value district is divided involves only a mile of conflagrating hazard within their own limits, they are badly exposed by the others in which all elements of the conflagration hazard are present to a marked degree. Not only is the hazard extreme within the congested value district, but is is augmented by the presence of a compact surrounding, great height, large area, frame residence district, itself unmanageable from a fire-fighting standpoint by reason of adverse conditions introduced by topography. In fact, San Francisco has violated all Underwriters' traditions and precedent by not burning up. That it has not done so is largely due to the vigilance of the fire department, which cannot be relied upon indefinitely to stave off the inevitable.

"The destruction was greater because the fire was hotter than was the case in the Baltimore fire, due, as has been pointed out, to the inflammable surroundings and the unprotected openings, and to the unchecked sway of the flames.

"The lower webs of floor tile came off to perhaps a greater extent than in the Baltimore fire. It is said to be impossible to secure a suitable hard sawdust on the Pacific Coast, such as is required in the manufacture of the porous terra cotta tile. The tile used are, therefore, more dense and of poorer quality.

"The question of fire-proofing, however, is of one degree, being dependent on the intensity and duration of the fire. A column may be properly fire-proof for an office building but entirely insufficiently fire-proof for a warehouse; or a column which may be all right for the upper stories, may fail in the basement as in the case of the Kamm building.

"Buildings should be self-contained, protected against exterior fires and capable of fighting fire from the inside; and in earthquake countries where service is likely to fail, it is highly essential, where possible, to have an independent supply, as from an artesian well with the necessary pumps and service pipes.

"The indiscriminate dynamiting in San Francisco did more harm than good, for the reason that the concussions damaged the surrounding buildings, as in the case of the Postoffice building, where the damage was extensive.

"The conditions at San Francisco were unusual, and even had not the water supply failed, it is doubtful whether it could have been controlled for the reason that so many fires at a time would have made it impossible for the fire department to handle them efficiently, especially since there was such a large number of combustible, non-fireproof structures.

The reports of the three engineers show that, as a rule, the amount of damage to buildings in San Francisco varied according to the character of the materials and the class of workmanship. Buildings constructed of first-class materials with careful workmanship suffered much less than those constructed of poor materials with inferior workmanship. This fact should be a lesson to owners, engineers and architects in all parts of the country.

In spite of all the lessons taught by great conflagrations, it is to be deplored that a great deal of poor material and workmanship will enter into the construction of many buildings. Some of this is due to the desires of owners who want their buildings constructed as cheaply as possible and are willing to sacrifice quality to cheapness. Much of it, however, is due to the fact that information is lacking in regard to the use of many materials of construction.

This is particularly true of concrete and reinforced concrete construction, the present rapid development of which is in its infancy, and emphasizes the great need of additional information in regard to structural materials. That the government is alive to this need is clearly shown by the work it is carrying on in its laboratories at St. Louis, Mo., where extensive tests and investigations of structural materials, principally cement, concrete and reinforced concrete are being made. The results of this work will tend to establish on a safer and more practical basis, the claims of different types and materials of construction to their respective merits.

* * *

Concrete Telegraph Poles

THE Pittsburg, Fort Wayne and Chicago Division of the Pennsylvania Railroad is experimenting with concrete poles for their telegraph service. In the fall of 1906 they erected a mile of these poles on their right of way near Maples, Indiana, in order to test them out in actual service.

They were built by Mr. Herman Tapp, contractor of Fort Wayne, at Maples, Indiana, and were hauled out on cars to the point of erection. The profile of the ground being somewhat uneven, the length of the poles were varied from twenty-five to thirty-four feet, in order to keep the tops of the poles as nearly as possible on a continuous grade. The poles were 8 inches square at the bottom, and were tapered to a 6-inch square at the top, the corners being chamfered two inches, making the pole appear octagonal above the ground.

Holes were left for the brace and cross-arm bolts and also for the steps. The reinforcement consisted of twenty-four ¼-inch wires running the full length of the pole. The conditions under which the poles were erected were not of the best, as the work was rushed in order to have the pole line complete for the date of a certain inspection trip. Because of this fact some of the poles were moved from the point of building and were erected within five days after they had been made. Notwithstanding this hurried method of construction and the severity of the windstorms of the past winter, the poles show up at present in almost perfect condition. The alignment is of the best, and the condition of the individual poles is very good, as no check marks or other signs of failure have appeared. The poles were set four feet under the ground and were bedded in stone screenings giving a solid foundation. Although the time these poles have been in use is not sufficient to warrant any sweeping statements as to their value, yet it is a fact that the first eight months of service have certainly showed exceptional results in favor of the use of concrete for this purpose. These can probably be put in at a cost of $8.00 per pole.

* * *

Union Rules

"Why didn't you put on the porous plaster I sent you?"

"Plaster! Docthor, I'm a mimber ov th' Hod Carriers' Union, and it's against th' rules for me to do any plastherin' except in th' reg'lar workin' hours."

Plant of the Western Art Tile Works at Tropico, Cal.

Art Tile on the Pacific Coast*

By ARTHUR J. BURDICK

FROM the mud-pits of ancient Egypt, where the captive Hebrew children fashioned rude bricks of clay and straw, to the clean, light, roomy twentieth century American factory, where are made tiles and fashioned mosaics that would make a Michael Angelo envious, is a far call. Not so great the space of time, however, as the distance in the achievement, both in the character of the products and in the methods employed.

There is so little likeness in the products of the modern factory to the rude conceptions of those early moulders of clay that it is hard to realize that the unbaked specimens dug from the ancient Egyptian fortifications are the progenitors of the exquisite architectural creations in clay turned out from the modern factory. Nevertheless such is the case.

No doubt those sun-dried bricks with which the fortresses of Pithom and Rameses were constructed and of which the pyramids were builded, were considered works of art in those days, though it cannot be imagined that they appealed to the asthetic nature of even those crude builders. Possibly when a few centuries have elapsed the tiles and clay creations of today may be termed crude and devoid of artistic qualities. Who knows?

Man has been practicing nearly 4000 years since he made those first bricks of clay and straw. Possibly another 4000 years' practice will result in quite as much advancement.

It was not until the Romans came upon the scene that the baking or drying in kilns of the bricks and other clay articles came into vogue. It was under this aggressive and progressive nation that art tiles and mosaic work came into use, and the real history of clay art began.

Machines for Stamping Tiles

Whenever an ancient Roman villa or town is unearthed today specimens of mosaic work are found. The floors of the atriums or open courts usually were paved with mosaics. As a rule cut stones or glass squares were used. In the Vatican, in Rome, are mosaics containing 25,000 different shades and tints. The designs are made of "smalts" or opaque glass, from which was cut the little squares called "tesserae."

There are in the United States but seventeen factories in which art tiles are made. There are several hundred cities and towns in which the products are used. There is but one factory west of the Rocky Mountains, and that is a mammoth concern with more than five acres of buildings at Tropico, Cal. With this single exception the most westerly factory is at Indianapolis, Indiana.

Not every kind of clay is adapted to the manufacture of art tile. In fact, there are but two localities in the United States in which clay suitable for the white tiles is found. These are in Connecticut and in Kentucky. These two States and Canada and England furnish the white clays for the factories in this country. However, the other grades of tiles have material more plentifully. In California all but the finer grades of clay are found near the factory. It is hoped and believed that the white clays may be found nearer at hand, too, for this great state, so prolific in minerals of nearly all varieties, has thus far been found to yield the things most needed at home.

One other material used in the manufacture of tiles comes from afar, also. After the tiles are pressed they are put in "saggars" or fire-clay cases, covered with sand, and packed in kilns to be burned. The sand in which these green tiles are packed comes from Belgium. It is the only kind known which will answer the purpose. This is a flinty, marble-like sand which does not melt or develop sticky qualities and it prevents the tiles from adhering to each other.

The process of tile-making is most interesting, and is more complicated than one might imagine. In the first place the clay is ground so fine that it will pass through a sieve with 120 meshes to the square inch. It then passes into vats, where it is mixed with water and kept in motion until it passes through pipes to a filter press, where it is forced by high pressure through the meshes of heavy, finely woven filter cloths which removes all but the finest of clay

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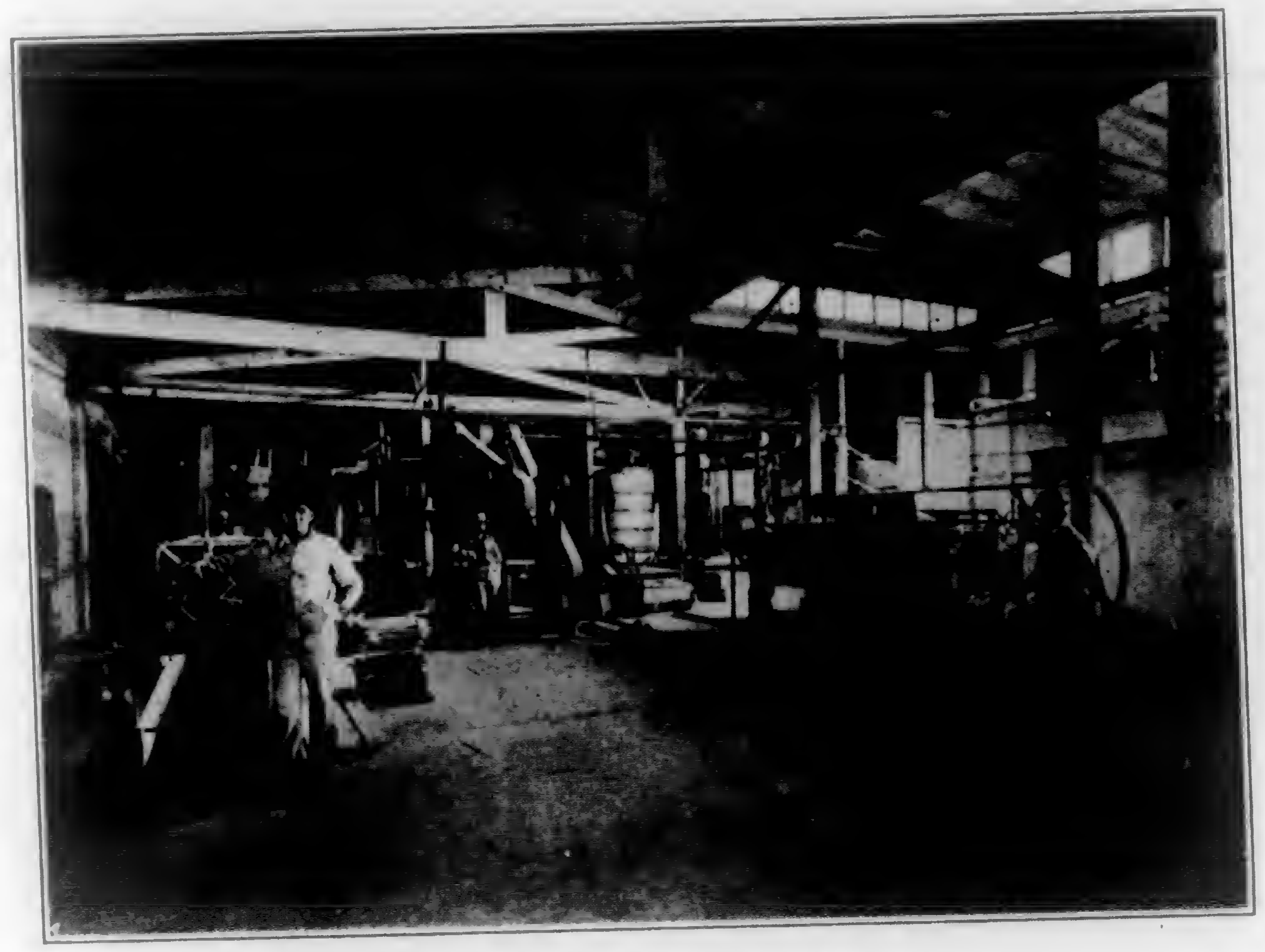
* Reprinted from the Pacific Electric Magazine, Los Angeles.

The Kiln Room



The Filler Room, where Clay is Mixed

flour. The fine dust is then run over magnetized plates to remove any metallic particles which may have been introduced in passing through the machinery.

Although the clay has been several times handled and has passed through several processes it is only ready for the beginning of the making of tile. It is now in the shape of fine flour, perfectly free from moisture, and it is stored in bins ready for further processes.

Before it is ready to be made into tiles it must receive back a portion of the moisture that has been taken from it. The introduction of this moisture is one of the particular features of the business. It must be so introduced as to produce a state of dampness without any portion becoming actually wet. It must be in so minute a quantity that a handful of the flour when pressed tightly in the fist will not stick together in a mass but fall out of the hand, when released, in fine particles, as when gathered up.

The clay is now ready for the moulders. In a large room are ranged the moulding machines. Each machine represents a different shape or size of tiling. The tiny round and square pieces used in floor mosaics are moulded in groups, several at a time, but the larger tiles, the base-pieces and the cappings are moulded singly. With each machine is a deep steel mould. Above the mould is set a steel plunger which fits tightly into the mould. To this plunger is attached a weight of ten tons, which is released at will of the operator of the machine. The mould is filled by hand tightly with the prepared clay flour and the weight operating the plunger is released. It is then lifted, and from the mould is pushed a perfectly shaped tile as solid, almost, as though hewn from stone. The tile is then ready for the kiln.

As has been said, before being placed in the kiln the tiles are packed in a peculiar quality of sand in "saggars." These fire-clay boxes are then stacked in tiers in the kiln, the great doors are closed and sealed, and the fires are turned on. In the factory of the Western Art Tile Works at Tropico, oil is the fuel used. This is forced, under high pressure, through the burner in at the base of the kilns in several places, producing a terrific heat. It requires a temperature of 2380 degrees to be maintained eighty hours to properly fire the tiles. Of course this heat cannot be measured by thermometers or by any ordinary means of computing temperature. To meet the emergency a peculiar instrument has been devised. In a fire-clay base are set three chemical pencils of different heat-resisting powers. Each pencil in the row is twenty degrees removed in power from its next neighbor. Up to a certain point these pencils are unaffected by heat. When the limit of its resisting power is reached the pencil melts and lops over. These are so gauged that when the second pencil succumbs to the heat the fireman knows that the proper degree of heat has been reached and he governs himself accordingly. The instruments are introduced in the kiln in apertures left for that purpose. By opening this aperture the fireman can at any time see at a glance the state of the instrument.

At the end of the eighty hours the fires are turned off and the kiln is left to cool. It takes it three days to sufficiently cool to admit of the removing of the "saggars".

Not yet is the tile ready for the packing room. It must have its enamel, whether it be white or colored. The tile which has been produced at this stage of the process is hard as stone and porous. The enameling process is simple. The enamel is a lead and soda silicate. It is prepared and colored with whatever color, shade or tint desired and the face of the tile is dipped in the fluid. Being porous the tile immediately absorbs the moisture, leaving the solid matter in a dry condition on the surface. After being thus dipped they must again be packed in the kilns and fired to bake the enamel.

After the second time being removed from the kiln the tiles are sent to the packing room. Here the larger varieties are packed in straw in boxes or bar-

The Stock Room

rels and made ready for shipping. The tiny cubes and round lozenge-like pieces, the diamond-shaped and the other tiny geometrical shapes are then put in barrels, each shape and color by itself, or they are prepared ready for laying by working out the designs in moulds and then pasting sheets of paper over the figures. These sheets are then packed in boxes and are ready for the laying in the floors or pavements.

Not only are the enameled tiles turned out but the vitrified tiles, terretvitrus tiles, for facings of buildings, wall tiles, terra cotta, hollow building tiles and wall partitions are manufactured as well. Tile is becoming an important factor in modern architecture. It is light as a material for walls and partitions, it is absolutely fire-proof, and it is less expensive than concrete or brick.

In the manufacture of art tiles several processes in connection with the preparation of material and the mixing and applying of colors are secret ones. Each factory has processes of its own, and each strives to outdo all other factories in artistic effects as well as in quality and durability. The result of this quality competition is that America is fast coming to the front in the quality and artisticness of its tiles. Some of the work outclasses that of the masters of the Old World, and every day sees new achievements in this line.

* * *

How McGinnes Fooled the Boss

Casey—Ye're a har-rd worruker, McGinnes. How many hods o' morther have yez carried up that laddher th' day?

McGinnes—Whist, man—I'm foolin' th' boss. I've carried this same hodful up an' down all day, an' he thinks I'm worrukin!

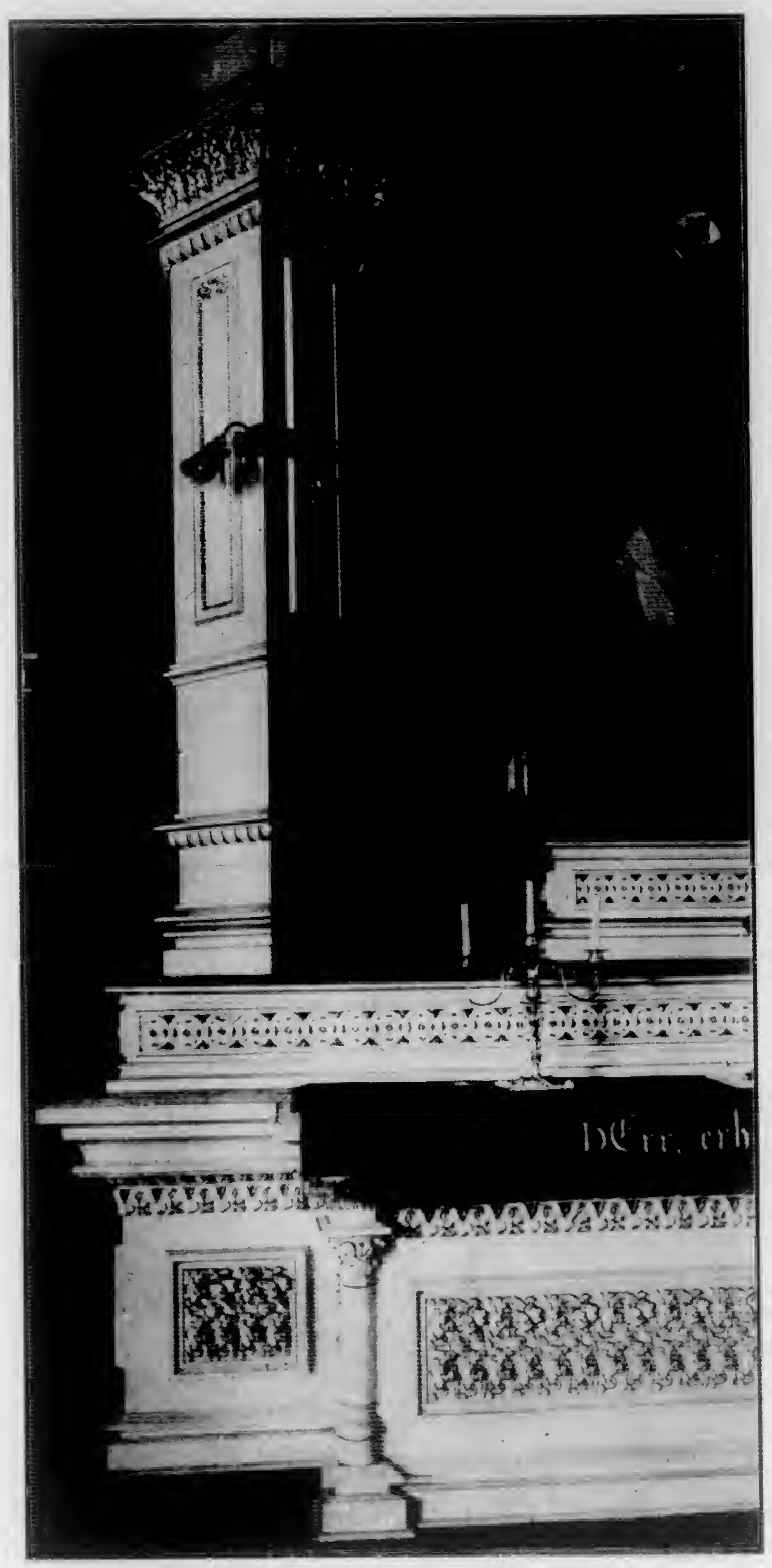
* * *

A window in a Surrey hostelry, says Mr. Hamp, is completely disfigured by numberless autographs of nonentities, and in the middle of the center pane, conspicuous among the maze of signatures, is the following epigram:

"Should you ever chance to see
A man's name writ on glass
Be sure he owns a diamond
And his parents own an ass."

The Minor Chord

By ROBERT MORGENEIER, Architect

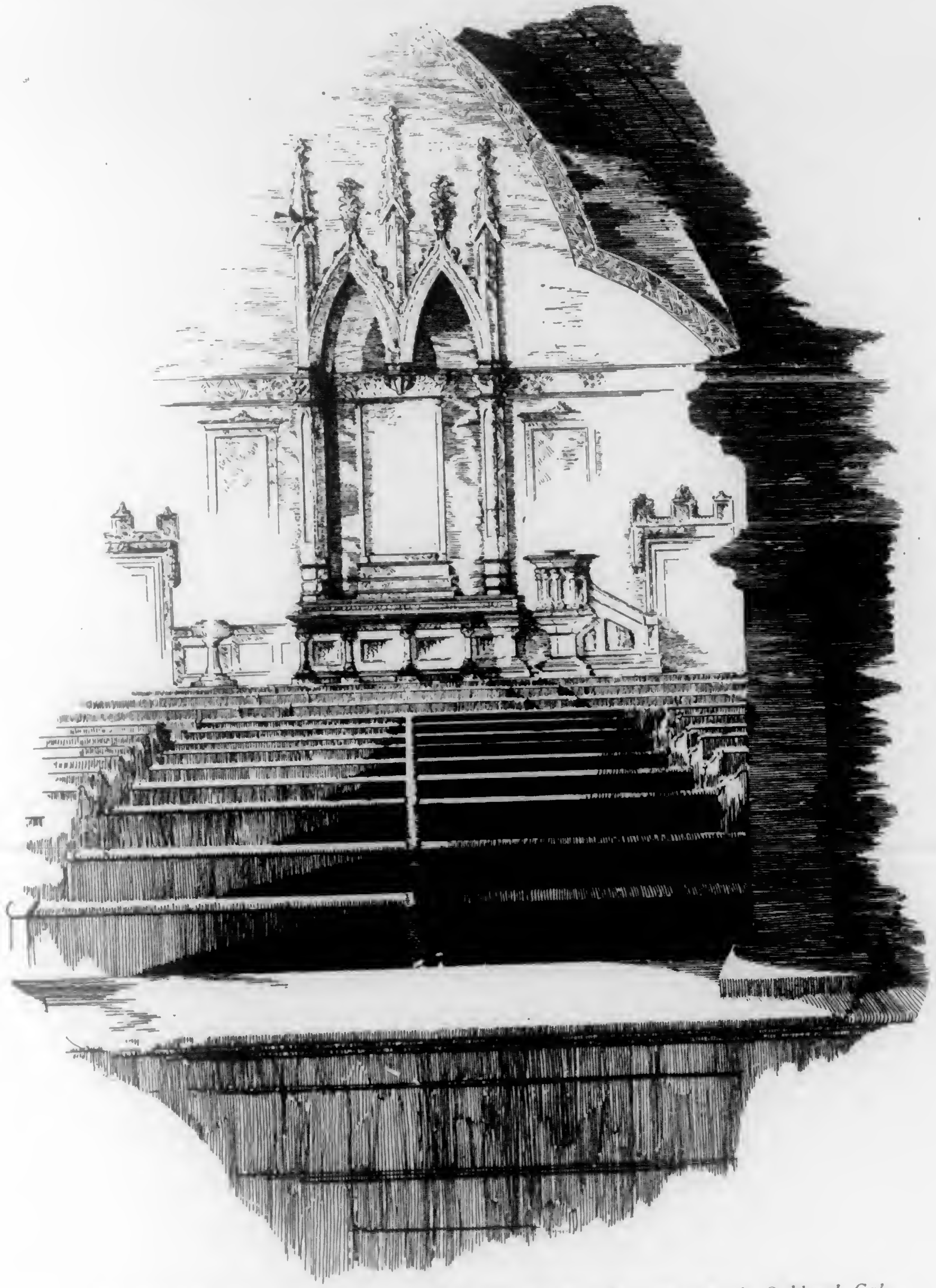


Detail of Interior of Zion Evangelical Lutheran Church, Oakland, Cal.
Robert Morgeneier, Architect

THE many new buildings being erected in San Francisco and the Bay cities, notably in Oakland, have so monopolized the attention of the public that the extensive work of improvements, remodeling and enlarging of structures is passed with little or no notice.

Yet some of this work, particularly when of artistic merit, deserves mention. An example is the recently remodeled interior of the Zion Evangelical Lutheran Church of Oakland. In its previous state this was one of those architecturally nondescript, bleak and cheerless edifices of an earlier period now happily past. Recent alterations have transformed the homely interior into a rare and beautiful bit of Gothic, in which two periods—the pointed and vertical—are most happily blended. The color scheme — pale antique verde and old ivory—in combination with cathedral oak seatings, produces an extremely pleasing effect.

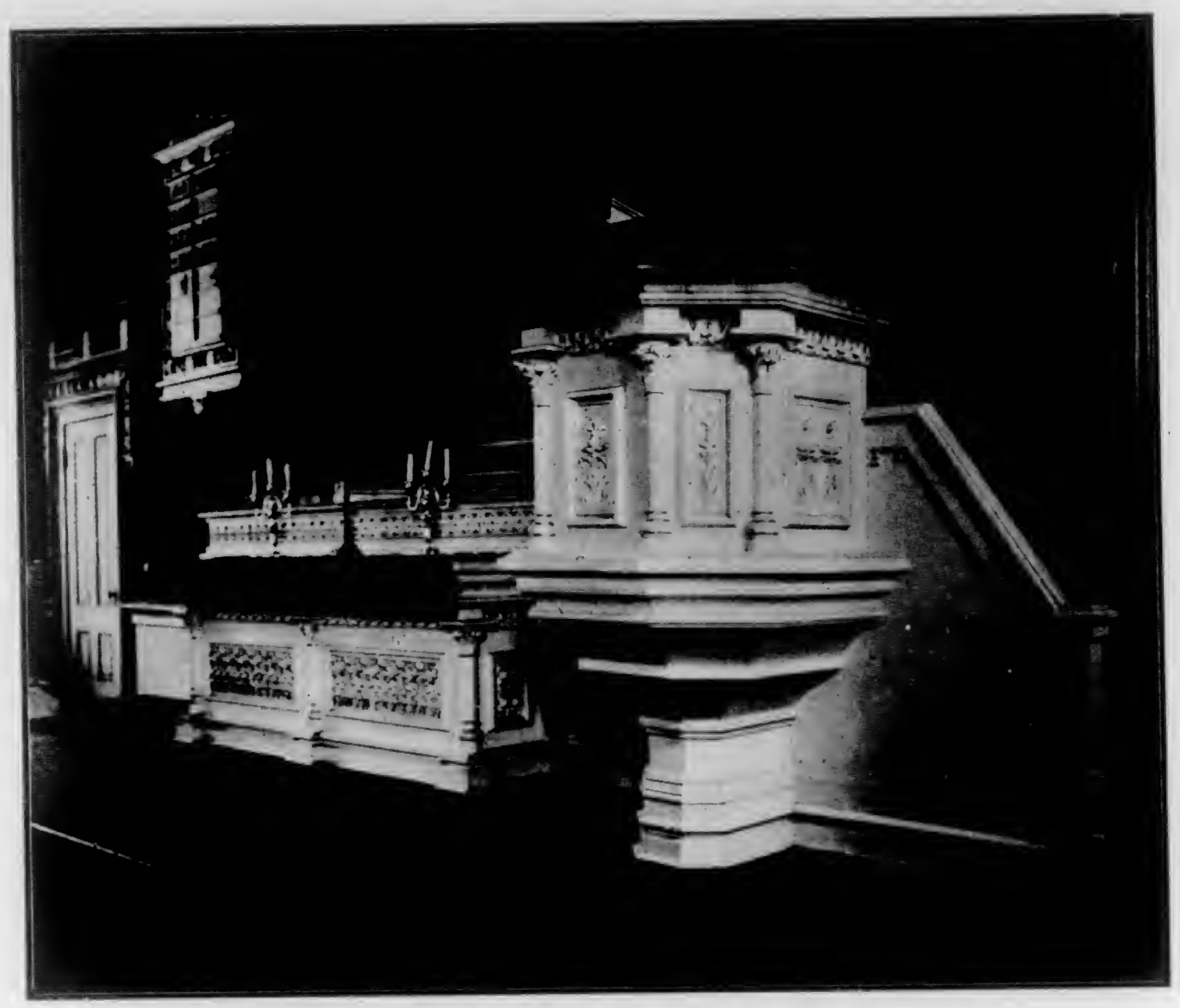
The sketch and photo-halftones of a few of the details, give a good idea of the work.



Pen and Ink Rendering of Interior of Zion Evangelical Lutheran Church, Oakland, Cal.
Robert Morgeneier, Architect

There are three motifs for these models, viz: The bell-flower from bud to full blossom, the foliage of the oak and lily of the valley, conventionalized. The ornaments consist of capitals, pilaster caps, finals, cusps, panels, bands, belts, linings and ten different sizes and designs of Gothic mouldings.

It is to be hoped that some of the new churches to be erected shortly will be examples of pure Gothic and of such splendor that these new models will only sound the minor chord therein.



Showing Gothic Detail, Interior Zion Evangelical Lutheran Church
Robert Morgeneier, Architect

Cement Competition

Apparently brick men have little to fear from the competition of cement. Experiments with it do not demonstrate its efficiency for any but the cheapest building. For low, cheap buildings, which make no pretense of beauty, or anything beyond bare utility, cement may do. It never will do where beauty as well as utility is required, and there never was a time when beauty was more generally a part of almost every architectural scheme than it is now. Cement lends itself to some of the plainer forms of decoration. It is not possible to do anything further with it. Most architects want more or less ornament on the buildings they construct, and no material lends itself to such artistic forms at such small expense as brick and terra cotta. This point alone is sufficient to indicate the superiority of brick over cement if nothing else did; but that is only one point. There are many others equally as important.—Clayworker.

* * *

Many a young architect, who has begun his career by treating contractors if not with haughtiness at least with condescension, has found himself seriously indebted to them before long for some kindly hint or warning in matters of construction that has spared him the shame of responsibility for a disaster. It is the part of prudence to listen patiently to anything in the form of a remonstrance that comes from a contractor or intelligent mechanic, and the advice is as applicable to the relations that exist between contractors and sub-contractors as between architects and contractors.

The Folly of Fire

By F. W. FITZPATRICK, Architect

REFERRING to the appeal that was made recently to the Mayor of every city in the country by the International Society of Building Commissioners, urging the better construction of buildings and more strenuous steps toward fire-prevention, the society's executive officer, Architect Fitzpatrick, was interviewed by a representative of the Architect and Engineer of California. In lamenting the general apathy that seems to be felt toward the subject Mr. Fitzpatrick made some telling comparisons and gave some astounding data.

"In buying a suit of clothes", said he, "do you select the shoddy, cheap-looking, cotton things, that are but little better than paper and that you know will lose their color and shape after a few days' wear; or do you look for clothes of good materials, that feel wooleny, that will keep their shape and look natty ten times as long as will the cotton ones and whose initial cost is but a trifle more? If you don't know the difference betwen the good and the poor clothing, whose fault is it, and isn't it to your best interest to learn something about the matter without delay, or take someone with you who can advise sagely?

"In buildings the conditions are exactly the same. It is absolutely incomprehensible why a man who lays any claim to business perspicacity will deliberately invest his money in something that is shoddy, that is ever a source of worry and expense and that stands a very great chance of being utterly destroyed, the so-called cheap building. Like the inferior suit of clothes, it is the poorest kind of investment and, adhering to the same comparison, it is certainly a sad commentary upon our intelligence that over $400,000,000 a year are being placed in what can be called 'shoddy' construction, while probably there are millions of suits of as shoddy clothing being made to fill the 'demand' that has been created therefor by someone who profits by that demand at the sore expense of an easily beguiled public.

"The answer is made that insurance insures those buildings. It does nothing of the kind. Insurance is but a gamble the average man is trapped into and, generally, with merely the hope that the loss he feels certain may occur will not be a total one. The chance of the building's standing by reason of its insurance is actually diminished rather than improved.

"The only thing to do is to build our new buildings better and revamp the old ones just as quickly and as well as we can. Our losses have gotten to the point where they are absolutely unbearable. That is something that even the least observant of our people must realize; insurance has become almost as unbearable a tax; the cost of living, everything has ben much increased by that one factor in our commercial economics.

"Thoroughly fireproof building is the only sensible, reasonable, economical way of doing things. It ultimately means a great saving, and even the initial cost is but a trifle over that of shoddy construction. And when I say 'fireproof' I mean not only that the building should be constructed of undamageable as well as incombustible materials, but they must be properly put together and the whole designed in a 'fireproof', intelligent manner. Indeed, part of the trouble so far has been that few architects know what 'fireproof' really means. There are countless ways of finding out, but they seem not to avail themselves of the advantages, and it has now become the imperative duty of cities to protect themselves and their people against the continued destruction of life and property, in any such ratio as it has been going on, and that has been brought obout by such utter stupidity and neglect of the very first essentials in safe, permanent and sensible construction."

Increasing Shortage in the Lumber Supply

MUCH concern is being manifested over the enormous consumption of timber in this country and the fact that the drain on our forests threatens to create a serious lumber famine. A conservative estimate of the present annual output of lumber, firewood and other forest products places the value at $1,075,000,000.

According to the government Forest Service every person in the United States is using over six times as much wood as he would use if he were in Europe. The country as a whole consumes every year between three and four times more wood than all of the forests of the United States grow in the meantime. The average acre of forest lays up a store of only 10 cubic feet annually, whereas it ought to be laying up at least 30 cubic feet in order to furnish the products taken out of it. Since 1880 more than 700,000,000,000 feet of timber have been cut for lumber alone, including 80,000,000,000 feet of coniferous timber in excess of the total coniferous stumpage estimate of the Census in 1880.

This country is today in the same position with regard to forest resources as was Germany 150 years ago. During this period of 150 years such German States as Saxony and Prussia, particularly the latter, have applied a policy of government control and regulation which has immensely increased the productivity of their forests. The same policy will achieve even better results in the United States, because we have the advantage of all the lessons which Europe has learned and paid for in the course of a century of theory and practice.

Lest it might be assumed that the rapid and gaining depletion of American forest resources is sufficiently accounted for by the increase of population, it is pointed out in the circular that the increase in population since 1880 is barely more than half the increase in lumber cut in the same period. Two areas supplying timber have already reached and passed their maximum production—the Northeastern States in 1870 and the Lake States in 1890. Today the Southern States, which cut yellow pine amounting to one-third the total annual lumber cut of the country, are undoubtedly near their maximum. The Pacific States will soon take the ascendency. The State of Washington within a few years has come to the front and now ranks first of all individual states in volume of cut.

At present but one-fifth of the total forest area of the United States is embraced in National Forests. The remaining four-fifths have already passed or are most likely to pass into private hands. The average age of the trees felled for lumber this year is not less than 150 years. In other words, if he is to secure a second crop of trees of the same size, the lumberman or private forest owner must wait, say, at least one hundred years for the second crop to grow. As a rule, such long-time investments as this waiting would involve do not commend themselves to business men who are accustomed to quick returns. But the States and the Nation can look much farther ahead. The larger, then, the area of National and State control over woodlands, the greater is the likelihood that the forests of the country will be kept permanently productive.

The question of how long our timber supply will hold out at the present rate of consumption cannot, of course, be readily determined. While on these points authorities differ, there is no question as to the fact that in a comparatively few years the supply of virgin forest will be practically exhausted.

History and Development of Waterproofing

By MAXIMILIAN TOCH

THE early history of waterproofing is clouded very much in mystery, for the reason there is little or no literature on the subject, and it must therefore be taken very much on faith and information. The early history of waterproofing is very much like the question which was asked of a schoolboy: "Which is the largest city in the United States?" and to which he answered, "Chicago." The questioner thereupon said to the boy, "Who told you so?" and the boy answered, "A gentleman from Chicago."

The first successful waterproofers were the Romans, as they were the first successful manufacturers of cement, and waterproofing consisted primarily in building foundation walls which were so thick it was difficult for water to penetrate. At the time Ceasar invaded Gaul, about 2,000 years ago, the Romans found a mineral which is now known as cerusite, and this they melted and from it they obtained lead. The metal was too soft, however, for technical use, but they soon discovered on rolling it into thin sheets that it corroded only on the surface, and corrosion went no further and this sheet lead is still found today as a waterproofing material in the foundations of many of the ancient structures.

The use of sheet lead for conveying water has been found to be more suitable than other materials, for the reason that the white scum which forms does not go any further, and this is an oxide which seems to protcet the lead underneath it. Where iron pipes are used for conveying water they in time rust out completely. So we have to thank the Romans for the real introduction of waterproofing on foundation walls. During the feudal times the method of protection that was practiced by the ancients was to build castles, and around these castles were built moats. These moats were huge dugouts filled with water and a drawgridge across. When the enemy approached them they drew up the bridge, and in that way isolated themselves and were invulnerable. To this day the expression exists in England "that a man's home is his castle," and it is traced to this construction.

The ancient Britains and Normans soon found that the water penetrated into the cellars or dungeons of the castles, and where these dungeons were used for prison purposes they cared not whether they were damp or dry, but they found later on that the seepage undermined the foundations, and so they were compelled to keep the water out, which in some cases they did with sheet lead, but more often with huge stones filled in with cement, and so no progress was made.

Coal tar pitch and coal tar liquid are materials which must be applied in a hot condition, and their value as waterproofing materials is in conjunction with fabric of various thicknesses running from three to ten. Bitumen is of undoubted value, but wherever there is a leaky gas main, a mixture of illuminating gas and seepage water always destroys coal tar waterproofing. It so happened that some of the stations of the subway in New York City were found to leak after they had been completed, and the water which came through the waterproofing was impregnated with illuminating gas; in order to overcome this, the speaker invented a new waterproofing fabric known under the name of Benzol Proof Cloth.

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* From an address before the Chicago Architects' Association.

Quite a number of years ago, I think it was in 1879, when the Obelisk was first brought to Central Park, New York, it was found that in a very few months it began to show signs of disintegration, and Prof. R. Ogden Doremus, who was at that time a well-known chemical expert, was consulted at to the application of the material to the Obelisk for its preservation. This illustrated the remarkable difference in climate, for the Obelisk had stood perfectly for 3000 years in Egypt, and within six months after its arrival in New York the temperature changes had begun to affect it. You, gentlemen, are probably aware that on the east coast of the United States, in the vicinity of New York, there is a temperature change of 130°, and during the year our thermometer frequently goes as low at 10° below zero, and in the summer season mounts to as high as 120°. Out here I believe the temperature variation is about 145°, and this explains why some building materials, particularly cement, are not suited for this climate.

I do not wish you to infer that a large body of cement or concrete will withstand the temperature variations, but I do know that in Belgium the manufacture of cement tiles has existed successfully for over 300 years, and these tiles are not more than one inch thick, and that the manufacture of the same tiles made in this country of the same material have not withstood our climate for one year.

And so it was when Prof. Doremus was consulted on this subject of waterproofing of the Obelisk against the ravages of the elements, he concluded that the application of hot paraffine would be the proper method. This was done, and, although this was over 25 years ago, no second application of hot paraffine has ever been applied to the Obelisk, and I know that the monolith has been perfectly preserved since then. This hot paraffine method is the outcome of what is known as the "Caffall Process," and I understand it is excellent, excepting for the lighter stones, on which it unfortunately acts as a dust and dirt collector. There are a number of other cement and stone waterproofing materials on the market which are solutions of paraffine, some of which were examined and found to contain a very small percentage of low-melting-point paraffine, and these are to be avoided, for they are only temporary materials, worth but a few cents per gallon, and sold at prices beyond their real value.

Another material which has been successfully used in Europe is the invention of Prof. Hauenschild, in conjunction with Kessler, and these chemists invented Fluosilicate of magnesia, known technically under the name of Fluate. The Paris Opera House, the Kaiser's Palace in Potsdam, and a great many other buildings in Europe were all treated with this material, and it serves an excellent purpose, for it hardens stone and makes it rain proof at the same time, but this beneficial effect is not instantaneous, for it takes more than a year to demonstrate itself.

About 16 years ago, when fireproof construction became quite prominent in New York City, and the question of taking away the air space had to be solved, my firm invented a material which when applied to the inside of outside walls, either over brick construction or hollow brick, would retain the plaster, do away with the air space and prevent moisture from coming through. A material of this kind could not, of course, contain any tar, for the reason any tar material would stain the plaster on the inner surface of the room. It had to be alkali proof, so that the lime in the cement and in the brown coat should not affect it, and yet I have the most remarkable story to tell in connection with this—that it took our concern over five years to educate the architects and builders to the use of it against most insurmountable odds. Today no prominent building is erected without the use of some of this material somewhere, and one of the largest buildings I know of in New York, which has cost up to $10,000,000, has this Damp-Resisting Paint applied on the walls, back on the ceilings, and under the floors. It took so long to educate the public in the use of this material that the time for its patent had elapsed, and now it is unfortunate that similar materials have imitated it, and to my knowledge no less than 12 substitutes appeared on the market, and then gradually disappeared as the material failed.

Its use as a waterproofing material and insulating material in cold storage building has made it many friends, for the immovable air in the air space and absolute freedom of odor and taint of the material has much to do with the success of the cold storage plant.

* * *

Hollow Tile For Country Homes

THE artistic country home, safe from destruction by fire and costing little more than inflammable structures of wood, is the latest development in modern building. It has now become possible to erect an inexpensive home of materials which will not only eliminate danger from fire, but will increase the durability of the structure and lessen the disbursements for repairs and depreciation.

The era of the fireproof home has now arrived, for the country as well as the city, for the wealthy as well as the man of moderate means. In about the same proportion as the price of lumber has increased the cost of fireproofing has decreased, owing to improved methods of manufacture and distribution, and the use of the latter now involves an outlay but little larger than that incurred in former years when burnable material was used. A row of houses recently erected in Pittsburg cost $4,500 each. Open bids were made for their construction before the contracts were let, and the lowest of these, for wood in place of hollow-tile, was $4,000. A fireproof house erected in Washington cost $5,186, while one bid for the old-fashioned wood frame was $5,875—a difference of $669 in favor of the former.

The man who wants a country home which will afford better protection against the elements than the frame house, however well built, can possibly provide—a home that will be outwardly attractive as well as inwardly comfortable in all kinds of weather—is beginning to investigate the cost and efficiency of various fireproofing materials which can be used for its construction. The result is that terra cotta hollow-tile blocks are now generally used for walls, floors and partitions in place of brick or wood. These blocks being made of hard burnt clay cannot be destroyed by fire. The theory in using them is to divide the whole structure into a series of fireproof units, similar to the bulkheads of a battleship, so that when fire occurs it may be confined to the area in which it starts.

Another advantage in the use of these blocks is that each contains a non-conductive air-space, which makes the building in which they are used warmer in winter, cooler in summer, and sound-proof.

In addition to all these advantages, a country house can be built of fireproof materials without sacrificing desired architectural features. Fireproof terra-cotta materials are molded in all sorts of forms and shapes, so that the design of the owner may be closely followed. Houses already built in this way show that the artistic effect is as beautiful in such structures as though they were built of wood.

The Decorations of the Colony Club

By C. WALTER TOZER

ONE of the most talked of club buildings, and one which has been written about in nearly all the magazines of late, is that of the Colony Club, at 120 Madison avenue, New York. It is one of the most interesting club buildings in that city of wonderful buildings, and is the only club house there designed exclusively for women.

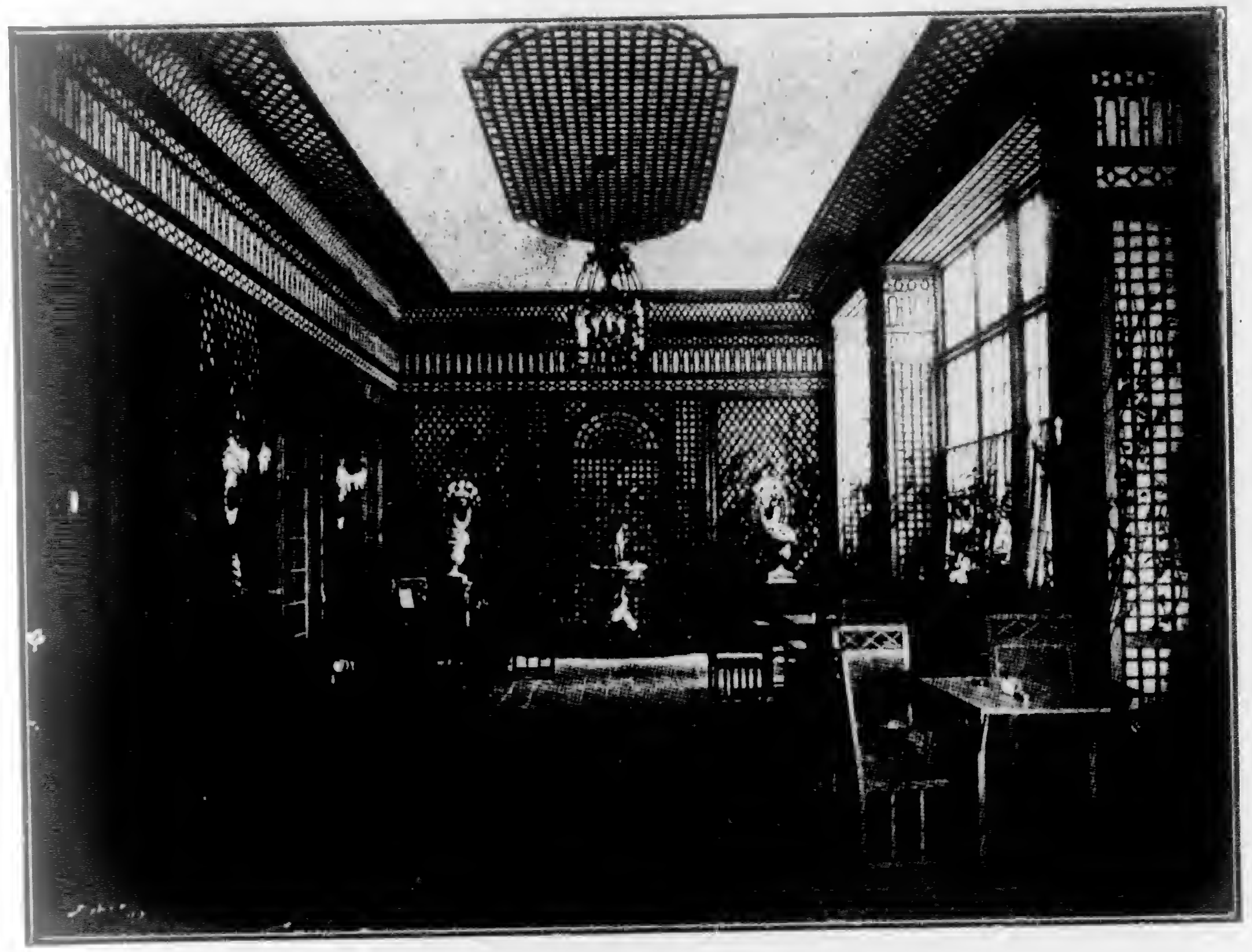
The Colony Club is essentially American in both its purpose and its methods, and is an organization for women on exactly the same lines as those which govern men's clubs. Besides being a social organization, it is a literary and athletic club as well. Its membership includes practically all the women of social prominence about New York, as well as the leading women authors, actresses, musicians and artists, both in New York and elsewhere. It is founded upon a basis very much broader than any man's club, but follows quite closely the main ideas of our own Bohemian Club.

The building was one of the last designed by the late Stanford White, of McKim, Mead and White, and he considered it one of his best pieces of work. And yet he has the buildings of the Metropolitan Club (the millionaires' club), the University Club and the Harvard Club of New York, standing as wonderful monuments to his architectural genius.

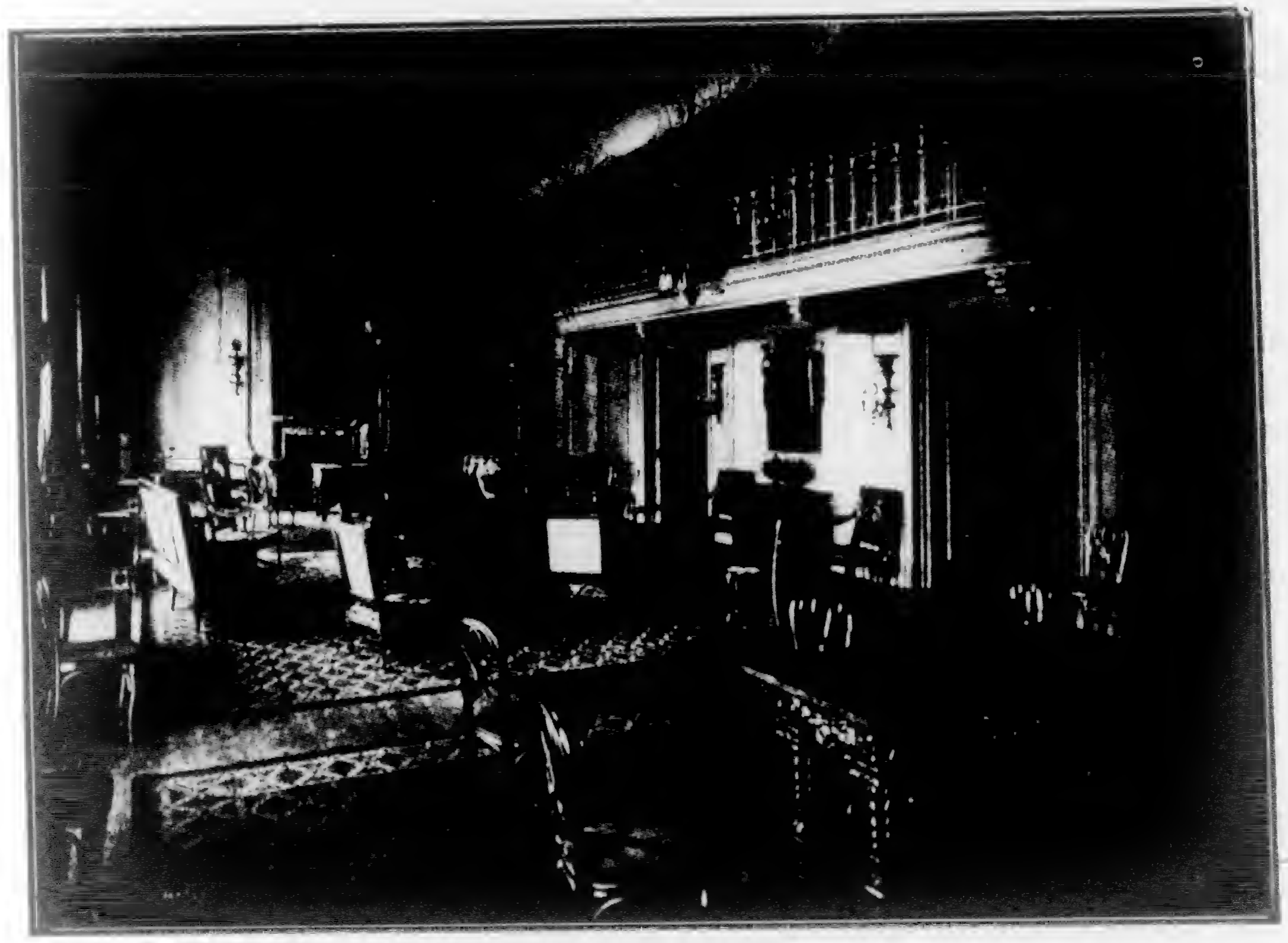
The Colony Club has a building, in conformity to its name, essentially Colonial in style, six stories high, with two of the floors mezzanine. Although Colonial, it has many striking and original features. It is constructed of dull red Colonial brick with white columns running from the base, supporting a balcony the width of the building. It is lavishly yet tastefully decorated and furnished. This work was under the direction of a lady decorator, Miss Elsie De Wolfe, a sister of E. S. De Wolfe of San Francisco, formerly manager of the Hotel Pleasanton, now manager of the Majestic Hotel and the Bellevue Hotel at present building. Miss De Wolfe is better known to us on the Pacific Coast as a popular actress, than as a decorator. She gave up the stage, however, a few years ago and decided to take up the art of interior decoration. Since taking up this work she has decorated a number of the homes of wealthy New Yorkers, including those of Whitney and Vanderbilt. She is responsible for the Colony Club's entire scheme of decoration. The color schemes of white and green, French gray and gold, and the Colonial buff and blue, were all selected by her. For the past two summers Miss De Wolfe has been abroad, collecting and discovering furniture and furnishings for the club. In fact she spends her summers at her beautiful ville just out of Paris.

The main entrance in the center of the building opens into a large central hall containing a great stone fireplace and heavy mahogany furniture. This hall contains the office and leads into the reception-room, reading-room, card-room, tea-room and library. The ground floor also contains the palm or trellis room, which is a unique feature of interior decoration in this country, and one of the best rooms of the building. The walls are made of diamond-shaped trellises, covered with twining ivy, while the floor is tiled, with a marble fountain in the centre, having real flowers growing around a marble cupid. Colonial green is the color scheme of this room and it has a most delightful summer atmosphere. The colors in the hall are white and green. The other rooms on the main floor are all well decorated and attractive, with oddly placed window seats and alcoves, some of which open out upon verandas. The prevailing style in the interiors is that of the Adam period.

The floor beneath this is given mainly to things pertaining to the physical side of life. One will find here installed the most approved systems of Turkish, Russian, electric and all other kinds of baths. There are also massage, mani-



Colony Club Reading Room and Trellis Room



Colony Club Tea Room and Assembly Room

cure and hair-dressing rooms, in connection with the baths. The swimming pool is the most attractive feature of this floor. It is twenty-two by sixty feet and is graded in depth from four to twelve feet, so that the novice at swimming and the aquatic expert alike may enjoy its privileges. The walls of this room are set entirely with mirrors, and the ceiling is hung with vines and clusters of grapes.

On passing to the second floor, one finds it mainly devoted to the reception room, which is two stories in height. The room can readily be arranged for dances, receptions or theatricals, while the balcony provides a convenient place for the orchestra. It has a vaulted roof with novel lighting effects, consisting of clusters of lights representing eagles hung from the ceiling. The coats of arms of the club are on each of the panelled walls. Its color scheme is French gray and gold, with deep red velours hangings and elegant furniture. The balance of the second floor is devoted to the gymnasium and squash courts, also two stories in height. In the gymnasium will be found all the most modern athletic appliances, also a basket ball court and a graded running track.

The fourth floor contains ten bedrooms, naturally following feminine tastes, but most charming for their simplicity and comfort. For the most part they are decorated in shades of pink and white and green and white. Large flowered wall papers and chintz curtains are conspicuous. The furniture is Colonial, with its spindle-legged chairs and tables and beds with mahogany bedposts.

* * *

Most Expensive Wall Paper

WHAT is believed to be the most expensively papered room in the world is an apartment in the residence of Charles Whitfield King, of Ipswich, England. It is papered with unused postage stamps with a face value of $4000 and an actual commercial value of about $25,000.

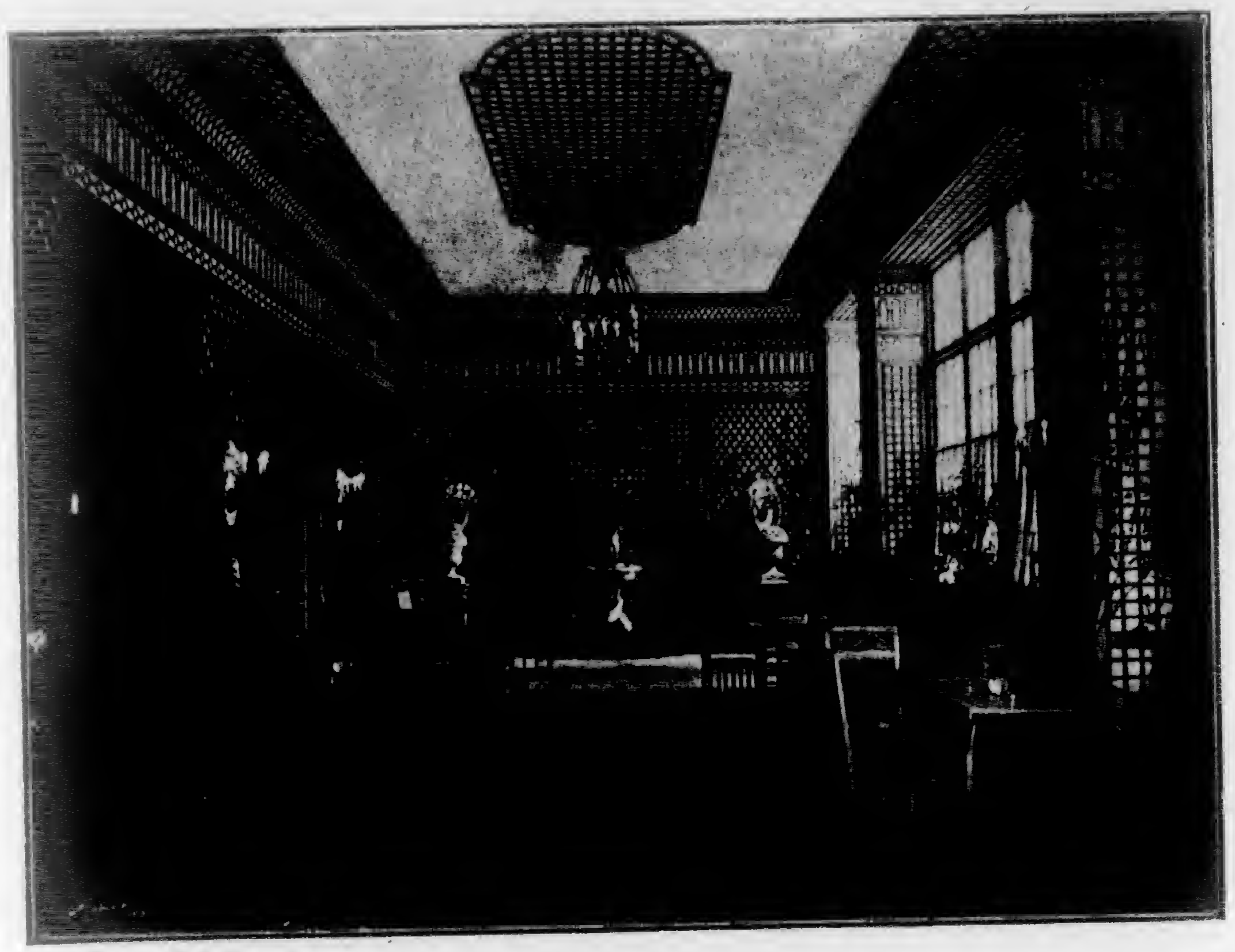
Mr. King is a dealer in postage stamps at Ipswich, having begun to collect stamps when but a lad thirteen years old. His business has grown to such proportions that it is declared he is able from his stock of 300,000,000 to supply at a single order twenty tons of stamps.

For many years Mr. King devoted considerable time to the culture of orchids, having at one time over 1500 rare specimens. Then he turned his attention to calla lilies, crossing many species and developing some most wonderful varieties.

It is in his country home, "Morpeth," that his most unique conception in the form of a room papered with unused postage stamps is to be found. China covered with stamps and rooms papered with used stamps are not unknown, although quite rare, but Mr. King's library is the only apartment on earth decorated with stamps never used for postage.

The room is about fifteen feet square and of the usual height. The stamps extend from floor to ceiling, forming even the border. The work of transferring the stamps to the walls occupied the time of an expert decorator eleven hours each day for nearly 100 days. Approximately 50,000 stamps were used, there being forty-eight varieties and many denominations. The stamps were not merely stuck on the walls in blocks or strips with only the purpose in view of covering up the white walls, but according to plans and designs worked out by Mr. King, were arranged with a view to producing an artistic and pleasing effect.

Most beautiful and elaborate designs of an imitation mosaic have been produced by the employment of stamps of certain colors, which, remembering



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Most beautiful and elaborate designs of an imitation mosaic have been produced by the employment of stamps of certain colors, which, remembering the fineness of the designs and engravings and the delicacy of the shadings, have produced a result exquisitely beyond the power of words to adequately portray.

Some idea of the beauty of a wall wrought in bright stamps, each a type of the highest skill of the engraver, may be obtained by an inspection of the frames showing samples of stamps and United States paper money in the Treasury building in Washington. These two frames are divided into panels produced by the arrangement of revenue and postage stamps fresh from the Bureau of Engraving and Printing.

The stamps used by Mr. King in the decoration of his library were from the Argentine Republic, Samoa, Bergedorf, Lubeck, Hanover, Servia, Cuba, Roman States, Philippines, Alsace and Loraine, and the United Kingdom. Of the famous stamps of the Roman States, with the crossed keys and tiara, emblematic of the authority of the Pope of Rome, which are of wonderfully brilliant coloring, no less than 13,000 copies were used.

The actual face value of the stamps, $4000, represents only a fraction of the commercial value of the stamps. Many of them are worth ten times their face value, having become rare since they were pasted on the walls fourteen years ago, and it is conservatively estimated that the stamps on the walls, if removed and placed in saleable condition, would net the owner the tidy sum of $25,000. If Mr. King would weary of his costly decorations, and desire to convert his expensive wall-paper into cash, he would find himself possessed of a comfortable fortune by reason of the fact that his "philatelic" treasures have been where he could not sell them. Thus is presented the curious spectacle of the most beautifully decorated room in the world adding annually to the wealth of the owner through the increasing rarity of the paper of which the decorations are composed.

This is, perhaps, no more surprising than the statement of stamp collectors that a person may accumulate a collection of stamps during the year 1907, lay it away and forget it, and in 1915, and probably in 1912, it will have doubled in value; in fact, it is not infrequent for stamps to quadruple in value in a single year, and a decline in value is almost unheard of. A shrewd financier of New York who has followed stamp collecting as a recreation since boyhood, declares that stamps are a better investment, to say nothing of the pleasure of collecting, than diamonds of equal value.—Wall Paper News and Interior Decorator.

* * *

Legal Distinction Between Flat and Apartment House

In these days of the popularity of flat buildings a judical construction of the distinction between a flat and an apartment will be of interest. The question was brought before the supreme court of New Jersey in the case of Lignon vs. Jaekle, 65 Atlantic Reporter, 221. The court says that a flat or flat-house is a building consisting of more than one story, in which there are one or more suites of rooms on each floor, equipped for private housekeeping purposes. An apartment house is either a building otherwise termed a "flat," or it is a building divided into separate suites of rooms intended for residence, but commonly without facilities for cooking. It was contended that the proper distinction depended upon the amount of rent which was paid. The court concedes the possibility of this, but holds that the payment of $40 a month rent will not convert a flat into an apartment.

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Architectural League of America.

At the Executive Board meeting of the Architectural League of America held in Toronto on June 19th, the permanent headquarters of the Architectural League were established at 729 15th street N. W., Washington, D. C., and Mr. H. S. McAllister, the ex-secretary of the Washington Architectural Club and now vice-president of the same, was appointed permanent secretary of the League. The Executive Board wishes to announce that all communications with the League may henceforth be directed to Mr. McAllister at the above address.

San Francisco Building Record Since the Fire

The building operations in San Francisco for the past six months shows how active the building market was the first part of the year and to what extent the labor troubles have interfered with operations during May and June. Some reduction has been made in the cost of many materials in the last sixty days. It is hoped that labor will see its way clear to make corresponding concessions, which would induce many to build who have postponed indefinitely the erection of improvements.

The following table shows the building operations from month to month since the fire:

1906.	Amount.
April	$ 817,084
May	621,054
June	687,391
July	1,959,290
August	5,640,508
September	5,341,106
October	6,836,331
November	5,733,985
December	4,140,984
1907.	
January	5,225,264
February	4,355,513
March	5,173,905
April	6,556,007
May	4,381,431
June	3,937,589
Total since the fire	$62,407,442

Plans Accepted for Berkeley City Hall

Architects Bakewell & Brown of 1860 Webster street, San Francisco, have had their plans accepted for the new Berkeley City Hall. The plans were submitted in competition with about a dozen sets from various architects in the State. The estimated cost of the building is $100,000. Bids are to be called for at once and the plans may be seen at the offices of Bakewell & Brown and the Town Trustees.

New Wage Scale for San Francisco Building Trades

Committees from the Builders Exchange, Builders' Association and Real Estate Association have agreed upon a new scale of wages which, if accepted by the Building Trades Council, will result in a reduction of wages for every line of labor engaged in the construction of buildings in San Francisco.

A general cut all along the line of the building trades was urged by the Builders' Exchange, the greater amounts being in the plastering, lathing, plumbing and bricklaying branches. In support of the demand for reduction it was urged that the high wages will eventually bring all building to a standstill. It was pointed out that over $185,000,000 of insurance money has been paid out and that building operations are now at a stage where it is imperative to procure outside capital to carry on the work. Failure to secure the necessary capital will mean untold misery to the very people least able to be idle. The builders claim that the country has been scoured, through the banks, for money to build on gilt-edged property, but capital has been timid owing to unsettled conditions in San Francisco. The adoption of the wage schedule proposed by them for a period of three years would insure the entrance of outside money.

Discussing the conditions as they are at present, it has been shown that rents and the cost of living are on the decline, and that the high wages asked by the members of the building unions would be unfair, in view of the decreasing cost of living. It is also pointed out that building supplies are undergoing a reduction in price, in accompaniment with other materials.

Thirty-four thousand men, represented by McCarthy and O. A. Tveitmoe, will face lock-out if some solution of the difficulty is not reached.

End of Stone Strike in Sight

Architect Willis Polk, with D. H. Burnham & Co., has recently returned from Chicago, where he went to consult with Mr. Burnham relative to the construction of several buildings which the Burnham architects have designed for the new San Francisco. These include the First National Bank building, the reconstruction of the Mills building and the addition of three more stories to the latter.

Mr. Polk brings the welcome information that the strike of the stone workers in San Francisco is likely to be settled within a few days after the arrival of the chief of that order. This strike has been most unfortunate, as it has seriously delayed the completion of several large buildings and is so serious that unless a compromise is arrived at some of the handsomest structure in the city, like the Bank of Italy, which was to have been of stone, will be finished in brick. There is, however, every reason to believe that a settlement will be made of the differences between the stone workers and the bosses and work resumed on the several large buildings which are now at a standstill.

Los Angeles Chapter, A. I. A.

The regular monthly dinner and business meeting of Southern California Chapter of the American Institute of Architects was held Tuesday evening, July 9th, at the Bristol Pier Cafe, Ocean Park.

A special car was chartered for the exclusive use of the members in attendance. After partaking of a sumptuous repast, the members were called to order by President Alfred F. Rosenheim. The first order of business was the signing of the Articles of Incorporation by the attending members. The minutes of the last regular meetings and of several special meetings were read by Secretary Fernand Parmentier, and approved. Treasurer August Wackerbarth made a verbal report of the financial standing of the Chapter.

A special committee consisting of R. B. Young, Theo. A. Eisen and President Rosenheim, appointed to draft proposed changes to the city building ordinance, failed to present a satisfactory report. R. B. Young read a proposed amendment to Sec. 13, Building Ordinance No. 12,800, New Series, dealing with the use of hollow tile in Class B and C structures, the gist of which was allowing the use of hollow terra cotta in lieu of wood for bearing partitions, and also the use of hollow tile wherever wood is used. Theo. A. Eisen also spoke on the advisability of the use of hollow tile in buildings of any description where masonry is employed. Architects Octavius Morgan, John P. Krempel, Charles F. Whittlesey and Julius W. Krause also commented briefly on the subject. No definite action was taken in the matter, the committee being instructed to present a majority report at the next regular meeting. The meeting then adjourned.

Those in attendance were: A. F. Rosenheim, Fernand Parmentier, Harrison Albright, Robt. F. Train, Theo. A. Eisen, Thomas Preston, Timothy Walsh, J. E. Preston, R. B. Young, Julius W. Krause, S. Tilden Norton, Chas. F. Whittlesey, A. Wesley Eager, Octavius Morgan, John P. Krempel, J. Lee Burton, P. W. Ehlers, Frederick L. Roehrig, C. H. Brown, Norman St. Claire, R. E. Williams, E. C. Kent and August Wackerbarth of Los Angeles and Joseph J. Blick, Charles A. Greene and Henry M. Greene of Pasadena.

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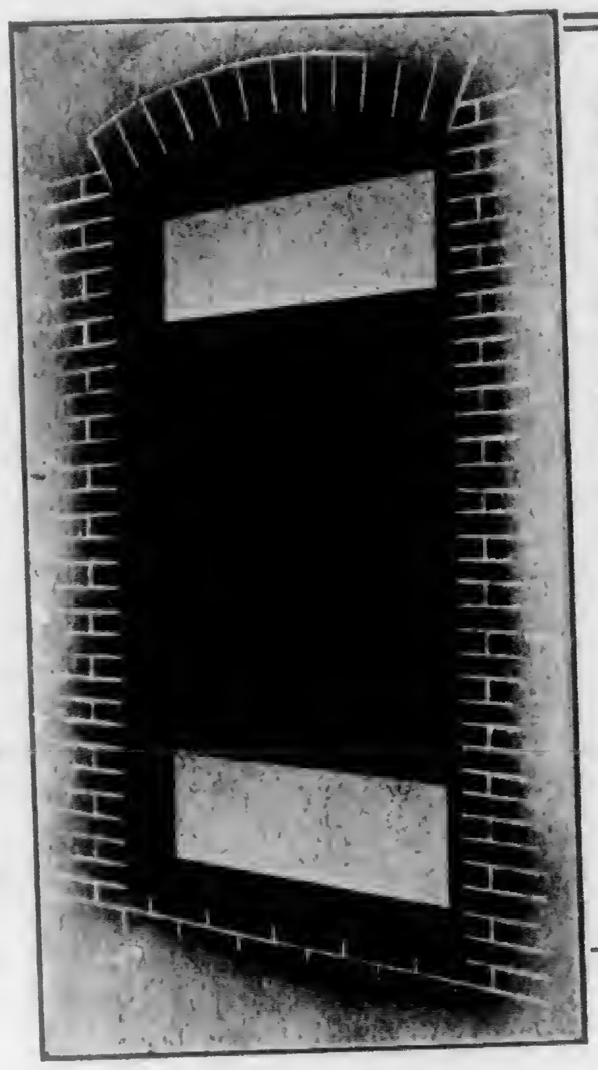

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Architects May Not Get Their Fees

It is reported that San Francisco's new Mayor may refuse to sign, on the ground that they are excessive, demands drawn in favor of seven architects for the aggregate sum of $31,617.25 for drawing the plans of several schoolhouses to be constructed under the bond issue.

The Board of Supervisors has passed to print the authorization for the payment of the demands. The resolution does not explain in detail the nature of the work done by the architects, but simply makes the designation "architectural services." The favored architects who were appointed by the Board of Supervisors and who charged three per cent of the total cost of the buildings for their "architectural services" and the amounts of their claims are as follows:

W. D. Shea, $8820; D. D. Kearns, $12,670; O'Brien & Werner, $1295; G. E. McCrea, $2677; A. M. Edelman, $3570; E. S. Lemme, $1293.75; Oscar Haupt, $1291.50.

Shea resigned as city architect two years ago in order to secure as supervising architect fees of three per cent on the cost of public buildings instead of the meager $5000 a year that he received in his permanent position. It was estimated that Shea would receive more than $100,000 as compensation for supervising the plans of city buildings, including the new County Hospital, which is to cost $1,000,000, and new schools for which $2,000,000 has been provided.

It is stated that the architects will have to specify exactly what work they did and they will have to show, too, that they did more than prepare blue prints.

New Architectural Firm.

E. A. Schumacher, architect, has severed partnership with William Binder of San Jose and is now associated with R. H. White, with offices in the Grant Building, San Francisco. Mr. Binder has moved from the Theater building, San Jose, to the Rea building. Some of the more important work which Schumacher & White have in hand are the Salinas City Hall, to cost $40,000, and the Salinas City Bank, which will represent an expenditure of $60,000.

In New Offices

Architects Stone & Smith, well-known designers of school houses and business colleges, have moved from the Midway building on Market street, to more pretentious quarters at 404 Kearny street, corner of Pine. These architects have been active in the rebuilding of San Francisco and some very creditable work has been turned out from their office.

New State Buildings

The following is a list of appropriations made by the last State Legislature for the erection of new buildings, reconstruction of those damaged by the great earthquake of last year and for equipment, etc. Plans for the proposed work are now in the hands of the State architect at his office in Sacramento, and bids will be called for as soon as the plans are perfected. All appropriations date from July 1, 1907.

Industrial Home for Adult Blind, Oakland, dormitory building, $50,000; repairs, $1899.33.

Agnew State Hospital, new buildings, etc., $800,000.

California Polytechnic School, San Luis Obispo, dormitories, $25,000; shops and furnishings, $20,000; two cottages, $5000; creamery building, $12,000; tool house, $2000.

Lick Observatory at Mount Hamilton, barn, $1621.

Napa State Hospital, reservoir and dam, $51,000.

San Diego Normal School, building and equipment, $40,000; repairs and additional equipment, $5000.

San Francisco Normal School, completion of building, $8500; equipment, $5000.

San Jose Normal School, new buildings, reconstruction and grounds, $250,000.

Southern California State Hospital, dairy barn and equipment, $12,000; two cottages and bath house and equipment, $43,000; slate roofing, $16,000; storm channels, cement and stone ditches, $15,000.

Salinas Contractor Busy

W. E. Greene, the Salinas contractor, has been given the contract for the erection of the new Salinas City Bank, to cost $63,000. Mr. Greene is to have general oversight of all the work. He has also taken the contract for building the Church of the Sacred Heart, Salinas, from plans by McGinnis, Walsh & Sullivan, of Los Angeles.

San Francisco Architectural Club

The San Francisco Architectural Club announces that a class in structural design of buildings of all classes and materials was organized July 29, 1907, under the instruction of Benj. E. Winslow, M. W. S. E. The class will meet at the club rooms once a week. The nature of the subjects taught is such that it will not be possible to join the class after the first lessons have been given. Special arrangements will be made for non-members. The club rooms are at 568 Golden Gate avenue.

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UNPROTECTED WINDOWS THE GATEWAY OF DESTRUCTION BY FIRE

The International Society of Building Commissioners has kept most careful tab on the fires of the past year and in a recent bulletin makes the statement that 44% of all the fire losses of the year are directly attributable to the lack of proper window protection! Fire originates in one building but cannot be confined there, and its travel is made easy via the window route to every building in the neighborhood. Further, 80% of all the damage done in buildings in which fire did not have its origin is fault of insufficient window protection. In a conflagration like that of San Francisco nearly 100% of the damage is directly attributable to that same cause, for in that case we know of but fourteen separate and distinct fires occurring in the city on that memorable morning. Had the adjacent buildings been made invulnerable by protected windows those fires would have been confined in the structures in which they had their inception and would have resulted in but insignificant blazes. Surely is this matter of properly protecting windows an important one! Shutters and the usual automatic closing affairs constitute but make-shift protection at best; the one assured and universally approved system of window protection is a metal or incombustible sash filled with wire glass, and where the danger is particularly great, on narrow alleys, etc., there should be two thicknesses of wire glass.

The International Society finds also that 78% of all the damage done in buildings where fire originated was caused by open stairways and elevators permitting the rapid spread of fire throughout every part of the structure. New buildings should be equipped with brick or hollow tile fireproof enclosures, and where these may be difficult to place about elevators and stairs in old buildings then light iron frames and wire glass enclosures can be so placed at little cost and affording splendid protection.

COMPETITION DESIGNS FOR CONCRETE HOUSES

The recent competition promoted by the Association of American Portland Cement Manufacturers developed some curious facts. The competition was divided into six classes which included single and double houses, ranging in cost from $2000 to $4500. The total number of designs submitted was 208. Over three-fourths of these were in the classes for single houses, and eighty-five designs were for single houses of the highest cost, $4500. The leisure that has prevailed in the offices of the East compared with those of the West was apparently reflected in the competition. Of the twenty-four awards given, twenty-two went to the East. The designs show an appreciation of the value of simplicity in houses of low cost. The architectural effects were sought mainly by good proportion, and the use of pilasters, panels and such simple means to which the material readily lends itself. The surface treatment, so important in building work of concrete, does not appear to have had full consideration. The Inland Architect, and other leading Eastern architectural journals, think that many of the designs show a lamentable lack of familiarity with the possibilities of concrete in this regard.

SHORTAGE IN THE TIMBER SUPPLY

Those having occasion to buy lumber or products made from lumber are forcibly impressed with the rapid increase in the price of this material. It is well known that the supply of timber is decreasing but the rapidity of this decrease is rather startling. During the year ending June 30, 1906, the export value of wood and manufactures of wood from the United States was $69,080,394 and for the eight months ending with February, 1907, $51,622,435. The total annual output of forest products for foreign and home consumption is now estimated at $1,075,000,000.

In a paper on the timber supply of the United States, R. F. Kellogg, government forest inspector, shows that we are consuming every year between three and four times more timber than is grown in the same time. In addition to this we are consuming the wood and timber which is nearest to the market, so that what is left is at points difficult to get at.

It is evident that the price of lumber must continue to increase unless some means can be found by which either the consumption of timber is reduced or its growth increased. This can be brought about only by increased acreage and by careful cutting of timber districts so as to save the young and growing trees. In Germany the remedy has been found in the organization of extensive forest reserves and the adoption of a settled policy of management which allows the cutting of only as much timber each year as will be replaced by the annual growth. This plan may be followed here. The growing use of concrete as a substitute for wood will also help to relieve the situation.

Architects Successful in Suit

Architects probably have more trouble in collecting payment for their service in cases of dismissal and substitution than in any others where they have occasion to seek relief in the courts, says the American Architect. When such, fortunately rare, cases do come before a court and are settled at all in the plaintiff's favor, it is most commonly on a quantum meruit basis. It is worth while, therefore, to note that, after three years' effort, a Pittsburgh jury, under Judge Fraser's instruction, has awarded in full to Messrs. Nirdlinger & Simpson the two and one-half per cent commission they claimed for work done by them in preparing to build a $50,000 warehouse near Third avenue and Try street, Pittsburgh. The case is imperfectly reported, but it appears that the architects' work was approved and they were told to go ahead and get estimates; but, before they could do this, the client turned the job over to another architect, who actually erected the building and was duly paid for his work.

The Publisher's Corner

Modern Wood Finishing.

Architects, contractors and builders would do well to familiarize themselves with the results that are being produced in wood finishing by the use of Wheeler's Patent Wood Filler. A cabinet containing various samples of wood thus treated is on exhibition at the salesroom of Whittier, Coburn Co., 18 Sansome street, San Francisco, and anyone interested is cordially invited to call and inspect. The samples are really exquisite. The object of using a wood filler is to fill the pores or grain of the wood in such a way that there will be a perfectly smooth, lasting and transparent surface for the application of the varnish or finish. The filler not only answers all these requirements, but it develops the full life and beauty of the wood and brings out the figures with remarkable clearness.

Plenty of Work for the Smith-Rice Company.

The Smith-Rice Company has been awarded the contract for erecting the steel for the new Pioneer building on Fourth street, near Market, San Francisco. The Lindgren-Hicks Company are the general contractors. The Smith-Rice Company also have the steel erecting well in hand for the Wethered building on Second street, and the Mechanics' Bank building on Market street. The collapse of one of the floors in the last-named building recently was not due to any inferior workmanship on the part of the Smith-Rice Company. The fault lay in overloading the floor before the steel beams had been properly riveted. Fortunately no fatalities resulted and the damage was insignificant.

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Success of New Enterprise

The A. C. Rulofson sheet metal works have been awarded the contract for installing the Edwards' improved fireproof metal windows and frames in the Alaska Commercial Company's building, being erected by the George A. Fuller Company at Sansome and California streets, San Francisco. The same company is also erecting the Atlas Investment Company's new hotel and they are using the same window.

Judging from the number of signs displayed on the new work all over the city, reading, "Sheet Metal Work and Metal Windows Being Installed by the A. C. Rulofson Sheet Metal Works," Mr. Rulofson is making a phenomenal success of his new enterprise. The successful manufacture of metal windows in San Francisco is keeping at home a great deal of capital that would otherwise be sent to Eastern cities, and it is to be hoped that the encouragement now being given to the above named concern will be continued.

All "Class A" buildings should be installed with the Edwards' Window, as it is a fire protection and it also reduces the insurance rate.

Busy Steel Erectors

Without doubt one of the busiest firms in San Francisco since the fire is the C. A. Blume Construction Company, erectors of all classes of structural steel buildings. The company has offices in the Jefferson Square building at 925 Golden Gate avenue. Mr. Blume reports the following big contracts on hand: D. Hewes building, fifteen stories; Clunie building, Cunningham building, Washington street school, Oakland; Valencia street theater, Spreckels' building, Bush and Kearny streets; Regan building and the Prescott school, Oakland. The firm is now at work wrecking the Crellin and Brandenstein buildings. Contracts have been completed on the following jobs in addition to about thirty smaller jobs: Flannery building at Geary and Market streets, which was the first steel frame building erected after the fire; Hale building, Emma Spreckels' building, Call Annex, Orpheum theater, Princess theater, Alcazar theater, Lynch building, Sloss building, Apache building, Station "C" of the San Francisco Gas and Electric Company, and the Sterling building.

Woods & Huddart

This firm, located at No. 11 Front street, San Francisco, is well known as extensive handlers of iron and steel products. The firm's sign occupies a conspicuous place on several prominent buildings as having furnished the structural steel and steel bars for concrete reinforcement. For steel bars Woods

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& Huddart are selling agents for the Buffalo Steel Company of Tonawanda, New York, who make exclusively high carbon bars. These bars can be furnished in rounds, squares, twisted squares, flats, and also the latest type of bars which are being made by that company (the spiral bars), which are extensively used instead of twisted bars, as the spiral have no sharp corners.

Woods & Huddart are also representatives of several mills that produce medium steel bars, rounds, squares and twists, for concrete work. During the past year they have furnished bars required in the new building of the American Biscuit Company, located at Battery and Broadway streets, and which is the largest concrete building to be erected in San Francisco since the fire. The following buildings have been supplied with steel bars by this firm: McGregor, Boyd, McCone, Schiff, Drexler, Durbrow, Bernard, Younger, Haslett Warehouse, Elkan Gunst, M. A. Gunst, Sanford Sachs.

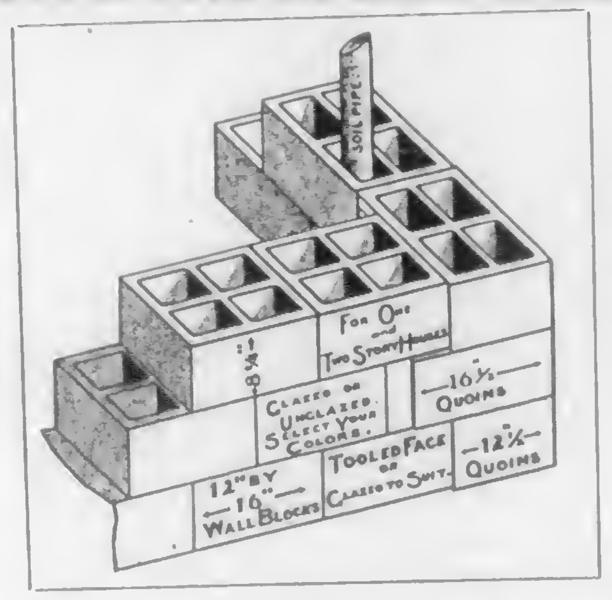
In addition to the foregoing list they have supplied portions of the bars on several other buildings, and also include in their list of customers: Lindgren-Hicks Company, James Stewart & Company, Ferrolite Company, American-Hawaiian Eng. Cons. Company, Kittle Construction Company, Pacific Construction Company, John R. Sheehan & Company, Land-Wharton Company, Richards-Neustadt Construction Company, Keatinge-Bradford Company, Frank B. Gilbreth, Couchot & Thurston, Koenig & Pettigrew, Ralph Warner Hart, E. Remington. and the Henry Cowell Lime and Cement Company.

The great advantage that this firm has, is that they have been and are now in a position to make immediate shipment from the various mills, or prompt delivery from their stock in San Francisco.

On structural steel, Woods & Huddart are the agents for Levering & Garrigues Company of New York, and are in a position to furnish estimates on structural steel for buildings and bridges fabricated, for quick shipment.

In New Quarters

The Delmar Smith Company, engineers and contractors, have moved to more pretentious and commodious quarters on the fourth floor of the Kohl building, San Francisco. This company was formerly located in the Stovel building on Market street. Delmar Smith is the head of the company which is prepared to figure on all kinds of construction work. Mr. Smith is a hustler.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Hardwood Floors in Demand.

Percy and Herbert Meyer of the Hardwood Interior Company, with offices and show rooms at 873 O'Farrell street, San Francisco, have had their share of the new business since the fire, although just at present business is a little slack. This company, however, is feeling the depression no more than all the other material people and with the settlement of the labor troubles there will again be plenty of work for the firm. The Hardwood Interior Company furnished the inlaid and hardwood floors in the Fairmont Hotel and have just contracted to put down the hardwood floors in the First Baptist church of Oakland. The handsome residence of Mrs. Louis Sloss at San Rafael has hardwood floors which were laid by the Meyer brothers and the Williams & Berg tailor establishment in the new French Bank building on Sutter street has been made most attractive with handsome office fixtures and polished hardwood floor installed by the Hardwood Interior Company.

Growth of Empire Plaster Company

In spite of the fact that part of its plant was badly damaged by the high water last spring, necessitating the shutting down of the mill for a time, the Empire Plaster Company has managed to catch up with orders and by a display of exceptional enterprise on the part of Manager Curry, the old plant has been restored and added to so that at present more than eighty tons of hard wall plaster are being turned out daily. The mill is located at Empire while the depository is about five miles distant. The construction of a railroad between the two places has been under contemplation for some time and either a private line will be laid or a second mill, close to the depository, will be built and equipped at an outlay of about $40,000. The company's water plant was permanently put out of service during the floods and since then the machinery has been operated by electric power. Empire hard wall plaster is now so well known on the Pacific Coast that few architects ever specify anything else in the plaster line.

Collapse of a Brick Building

The Santa Fe roundhouse, a brick structure, one story in height, with twenty stalls for engines, collapsed at San Bernardino July 4th, burying ten locomotives beneath the debris. The cause is unknown, but a crack in one of the side walls had been noticed for some time. The collapse is believed to have been due to a general weakening of the sidewalls.

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Worswick Street Paving Company

The Worswick Street Paving Company of Fresno has lately taken several good size contracts for street paving. Under the personal supervision of Mr. Worswick, the company is finishing a nice paving job for the city of Hollister. Something over 165,000 square feet of asphaltum is being laid and when finished Hollister will have a main business thoroughfare second to none in the state. The company is making preparations to start work on a job in Modesto that call for nearly 300,000 feet of paving blocks. About ten streets are to be put in shape. The Worswick people are rapidly gaining a reputation throughout the Coast for doing first-class street paving and as a result they are receiving more contracts than competing companies.

Architects Should Specify This Tray

J. F. Reilly & Company, 23 and 25 Spencer place, San Francisco, manuafcturers of the well-known star cement laundry tray, report a very good business since the fire. The company was one of the first to resume business, building a substantial plant on the site of the one burned. All trays turned out by this firm are sold under a written guarantee. They are manufactured from the most carefully selected materials, including the highest grade cement, and only experts are employed. The company is making a specialty of fish and butcher tanks and trays for apartment houses and flats. They are without doubt one of the most reliable concerns in this line of business in California.

Notice of Dissolution of Co-partnership

The co-partnership heretofore existing between Wm. Ham. Hall and L. J. Mensch, under the firm name of "The Concrete Company," is hereby dissolved by mutual consent, to take effect on the 30th day of July, 1907.

WM. HAM. HALL.
L. J. MENSCH.

San Francisco, Cal., July 23, 1907.

The Gladding, McBean Company has received the contract for furnishing all the terra cotta for the new ten-story Phelan building to be built at the corner of Market and O'Farrell streets, San Francisco. The building is to be of reinforced concrete and faced with terra cotta. William Curlett is the architect.

The Paraffine Paint Company has moved its general offices from Oakland, to which city it was driven by the fire, to the Merchants' Exchange building, where a handsome suite of rooms has been leased for a term of years.

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Russell and Erwin Have Larger Quarters

The Russell and Erwin Manufacturing Company will shortly occupy larger quarters in the Monadnock building, arrangements having been made for an additional room adjoining the present office on the ninth floor. This will give the company an opportunity to better display its complete line of up-to-date hardware. Some of the big contracts recently taken through the San Francisco office are the following: Metropolis Trust Company's fifteen-story building, Humboldt Bank's eighteen-story building, Union Square building, Berry apartments, Seattle, and the new Washington hotel, Seattle.

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Work Done by Jno. Schulz

Few engineers in San Francisco have been in greater demand since the reconstruction of the burned city has been going on, than Jno. Schulz, whose office is in the Midway building. Mr. Schulz not only furnishes designs and estimates for steel frame and reinforced concrete buildings, but he takes personal supervision of structures for the architect and owner. Among the more important buildings for which Mr. Schulz designed the steel work are the Delger block, Class A and eight stories in height; the Young building, the Marion building at California and Drumm streets; the Idora Park skating rink; an eight-story building for the Holmes Investment Company and which will contain 1000 tons of steel; the Kirkoff building, a ten-story Class A structure at Sixth and Main streets, Los Angeles; the Eischmann building at Seventh and Hill streets in the same city; the Roebling warehouse in San Francisco, and which will contain 1500 tons of steel; the Farmers and Merchants bank, Oakland; the Moore building at Pine and Battery streets, San Francisco, and the following reinforced concrete structures: Santa Ann building, Kearny and Powell streets, Alaska Commercial building at Sansome and California streets; a five-story structure at Sixth and Howard streets, the Scheidemann building at Stockton and Sutter streets, the Bishop warehouse in Los Angeles and a concrete residence in San Mateo. Most of the buildings above referred to were designed in the offices of the following architects: Meyers and Ward, Sutton and Weeks, Herman Barth, Meyer and O'Brien, Welch and Carey, and W. D. Shea of San Francisco, and Morgan and Walls of Los Angeles.

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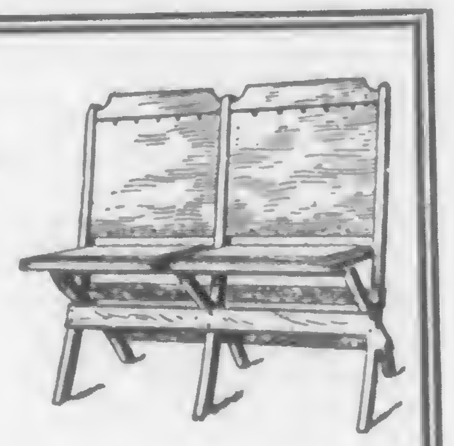

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A Steel Standard Opera Chair.

Attention is called to the new opera chair which is uniformly used throughout the Eastern States, and has found its way to the Pacific Coast, the Empire theater of San Jose having recently been fitted up with this form of furniture, through the California agents, the Spencer Desk Company of 507 Montgomery street, San Francisco. The remarkable part of the chair is the fact that it is the strongest and latest form of theater furniture made, and results in considerable economy to the user in the lack of breakage, entire absence of dust-catching parts, and the noiseless action of the hinges.

The opening of every performance at a theater is usually punctuated and sometimes entirely brought to a stop, as far as the hearers are concerned, by the constant slamming of seats being arranged for late arrivals. The friction hinge used on this chair makes this an absolutely noiseless action.

The structural portion of the seat made of wrought steel instead of the usual cast iron, renders it impossible to break the same. The simplicity and directness with which the parts are applied constitute a considerably cheaper equipment than an equivalent chair in any other form.

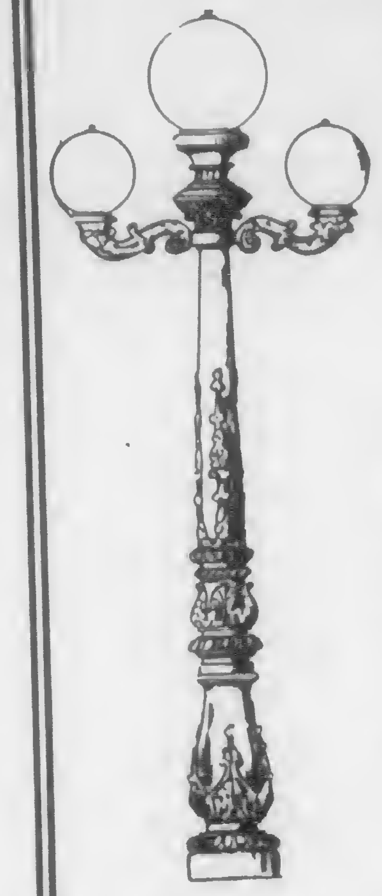
The manufacture is most interesting, and as stated by the makers, is as follows:

"The legs of the chair are made of what is known as Tee (T) steel one inch on a side. The pieces which support the back and the hinges are made of hoop steel pickled and limed. The tie pieces, etc., are made of bar steel No. 10 in several different widths. We do not use angle iron in this chair, but use the flat bar and form it on the press. There is not a piece of cast iron about the whole chair. All of the work is done by punch presses and it requires from 60 to 70 operations.

"The only heat applied is that used in case hardening that portion of the hinge upon which the wear comes, this being the little shoulder on the round flat piece which goes on the outside of the hinge; likewise in the back-support strength is acquired by putting in two ribs which tend to stiffen the back."

Prospective builders and architects who have seen the chair and noted its action and putting together, are enthusiastic about the same and feel that it will supplant the old-fashioned clumsy seat used in theaters, lecture halls, etc.

The new Victory theater, now under construction in San Francisco, will be supplied with the new chair, as will several other amusement houses on the Coast.



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because it possesses highest fire-resisting properties and is wind, moisture and weather-proof.

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Write for Samples and Catalog

H. W. JOHNS-MANVILLE CO.
180 Second Street, San Francisco

Oakland's Great Hotel

Bids are being taken for the construction of Oakland's new $2,000,000 hotel at the office of the supervising architect, Walter J. Matthews. The plans are from the office of Architect H. J. Hardenbergh of New York. The building is to occupy the spacious site at Fourteenth and Harrison streets. The building will be of stone and brick and six stories in height.

The first floor provides for wide foyers and corridors, a splendid court in colonnades, a cafe, grand dining-room, ladies' grill, breakfast room, ballroom with movable stage, promenade lobby, reading and reception rooms, offices, etc.

The five upper floors of the building are to be divided into guests' rooms, the main feature of which is that they are to be all single rooms facing on the streets or courts, and will have bathrooms between the rooms and will be so arranged that the rooms can be used as suites or single. All the bathrooms will face on the streets or courts, and are known as outside bathrooms, giving them plenty of light and sun, air and ventilation. These bathrooms will be fitted up with all the latest plumbing fixtures, tiled floors and walls.

In the basement of the building will be billiard room, barber shops, children's dining-rooms, kitchens, machinery room, laundries, refrigerating rooms, baggage room and other necessities. There will be six high speed elevators for use of the guests, as well as elevators for the servants and the baggage.

The interior finish, decorations and the furnishings will be in harmony with the magnificence of the general architectural plan. The stockholders are Oakland bankers, businessmen and others, representing all classes. The directors of the company are W. W. Garthwaite, Edson F. Adams, W. G. Palmanteer, W. G. Henshaw, P. E. Bowles, Thomas Prather, D. Edward Collins, H. C. Capwell and J. C. McMullen.

"Perolin."

Announcement has just been made of recently completed arrangements by which the H. W. Johns-Manville Co., the well-known asbestos firm, with branches in all the leading cities, has acquired the exculsive sales agency for "Perolin" throughout the United States.

"Perolin" is a remarkable product that solves the important problem of preventing the dust and dirt nuisance in public buildings, stores, factories, schools and homes.

In the past various indifferent and unsatisfactory methods have been devised for this purpose. The most common method is to use wet sawdust, or sawdust, sand or salt mixed with crude oil or kerosene. All of these are ineffective. Most of them are highly combustible, and instead of cleaning the floors, leave them in an unsatisfactory condition. Wet sawdust to a certain extent allays the dust, but it leaves the floor muddy. Oily compounds assist in laying dust but leave the floors, carpets and rugs soiled. Oiled floors are condemned by the Fire Insurance Underwriters' Association because of the added fire hazard.

"Perolin" is the ideal fireproof floor-cleaning compound. Instead of laying the dust, it absorbs it. It draws the dust from cracks and crevices in the floors and from carpets and rugs. It is a powerful disinfectant, destroying all disease germs that are common with dust, leaving the air pure and wholesome and the floor absolutely clean.

The Chronicle Building

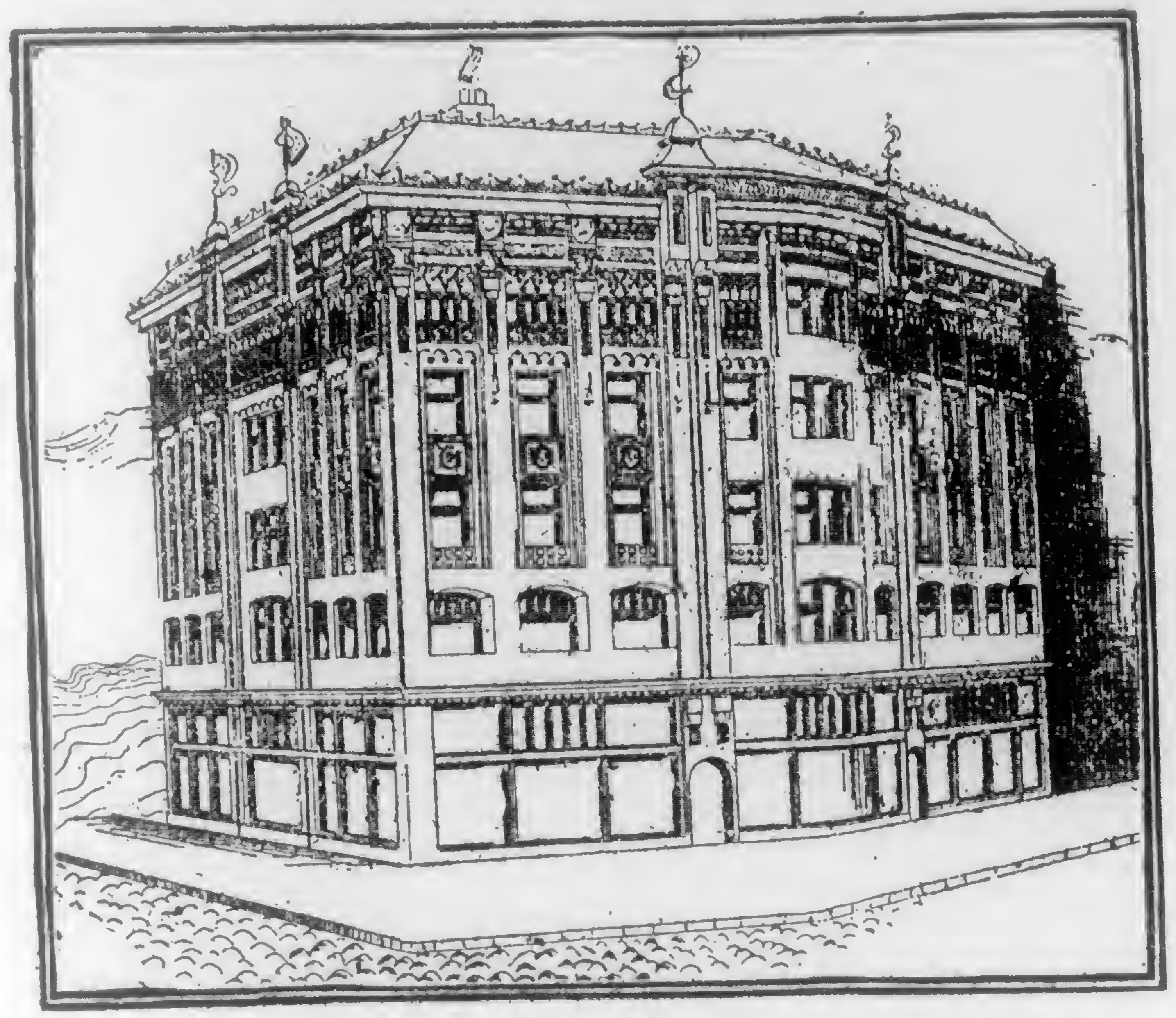
P. Noble is to furnish the steel for the Chronicle building. The work of demolishing the old structure is progressing rapidly under the excellent supervision of the American Construction Company. The job has been a most difficult one requiring not a little expert judgment to prevent accidents. The new building will be of the Class A type, with concrete floors and brick facing. L. B. Dutton is the architect.

Building Chinese Houses

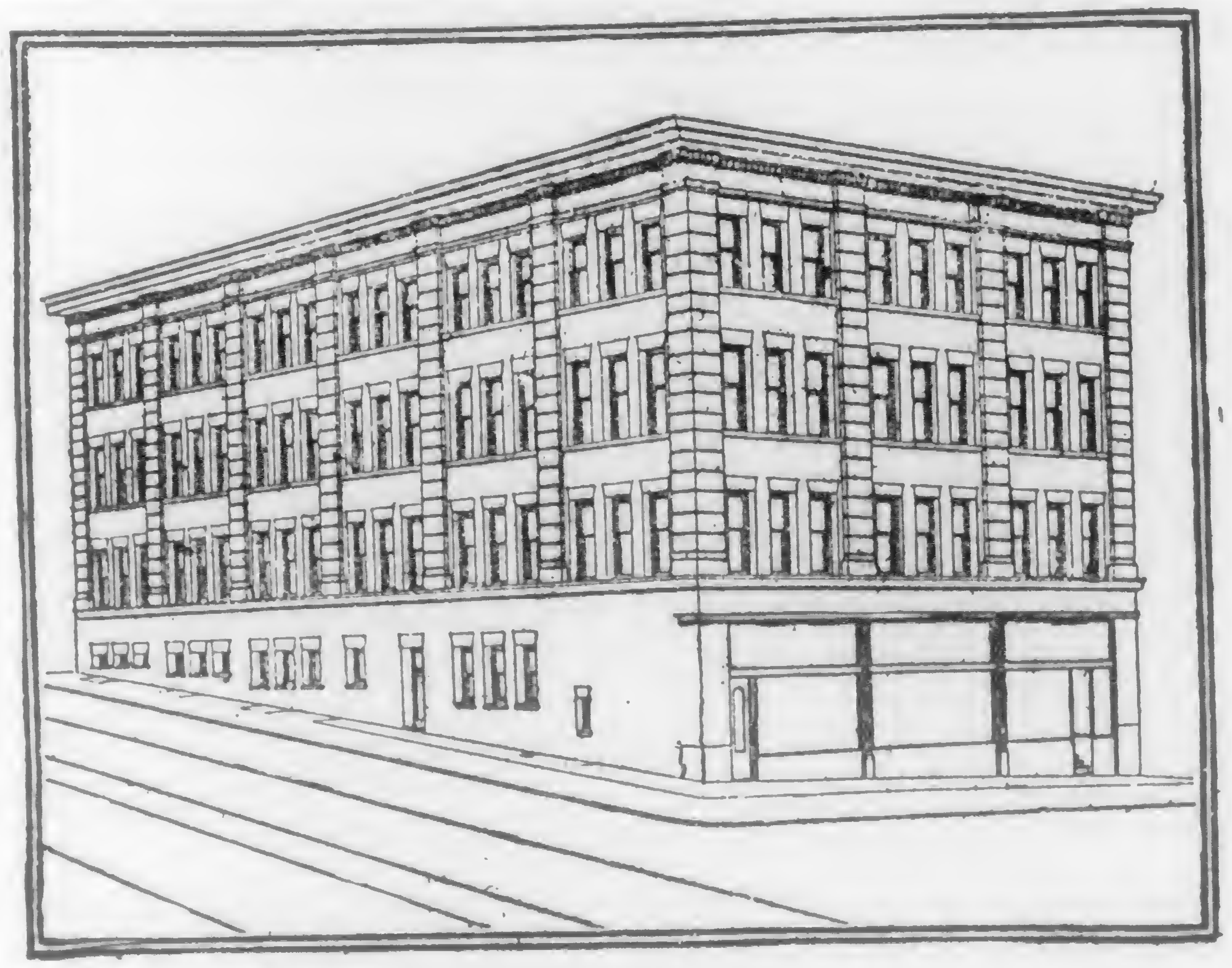
Architects Ross & Burgerin have plans for several picturesque Chinese buildings to be erected in San Francisco's new Chinatown. They will be two, three and four stories in height and will be typical in design of the native abodes of the Celestials. One of the buildings is already under construction.

Swimming Pools.

"Swimming Pools" is the name of a little book just issued from the press of Domestic Engineering, published in Chicago. The volume is unique in that it is the only work yet published which gives the details of the construction of swimming pools, directions for the selection of method of heating, size of heater necessary, etc. The book contains a number of diagrams and drawings illustrating various points brought out by the author. It is a handy volume for architects, engineers and plumbers to have on file in their offices.



Two Substantial Buildings now being Finished in the Wholesale District, San Francisco



Big Reinforced Concrete Warehouse

SPOKANE, Wash.—A. M. Marshall, president of the Marshall-Wells Hardware Company of Duluth, Minn., has bought a site for $110,000 on Main avenue near Market street, Spokane, where a six-story reinforced concrete structure, 300 by 142 feet, with a full basement, costing $400,000, will be erected. Work on the structure is to begin next fall. The company is one of the largest hardware firms in the United States, having a capital of $5,000,000 and a surplus of $3,000,000.

Contract for Burrell Company

The Burrell Construction Company of Oakland has been given the contract for the construction of a post exchange and gymnasium building, and for the installation of the plumbing, heating and electric wiring of the same, to be erected at Fort Whipple, Prescott, Arizona.

Architect—Why was Michael Angelo a great swindler?

Contractor—Because he chiseled a woman out of a piece of marble, I presume.

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WE DIRECT the attention of ARCHITECTS to our exceptional resources for the complete interior decoration of any style building. Our complete and efficient decorative department; our extensive selections of decorative materials; and our close affiliation with American centers of interior decorative art, enable us to afford every possible advantage to architects for the effective expression of their ideas. Our work may be seen in finer residences of the Bay Cities, and several of the new hotels now building in San Francisco and Oakland are to be decorated by us. The leading architects our references.

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San Francisco, Office and Store 19th and Minnesota Sts.

Warehouse 20th and Indiana Sts. Telephone Market 1710

Burnett Iron Works Busy

In spite of the depression in business in and around San Francisco, the Burnett Iron Works of Fresno has no cause to complain, for the company has had a busy year of it so far and the indications point to a continuation of good times. J. H. Burnett, president and manager, is an untiring worker and much of the success of the concern is due to his personal efforts.

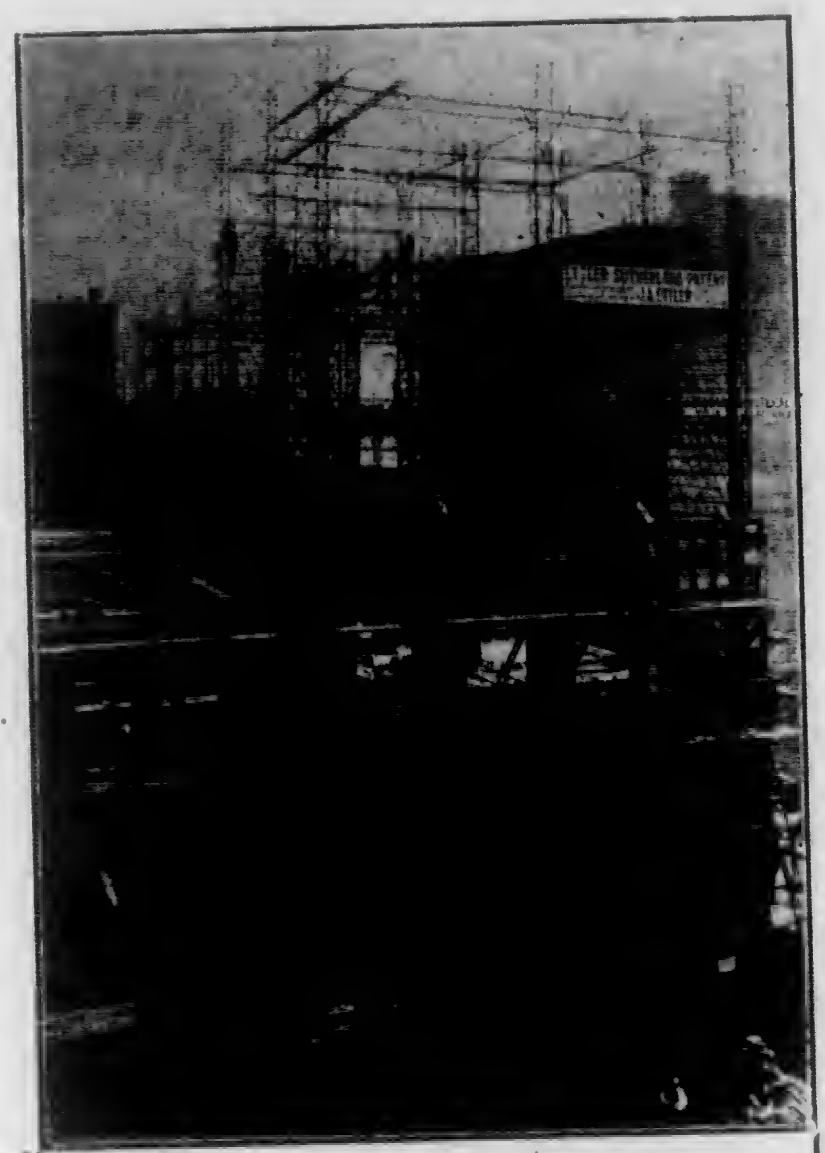
The company is prepared to fill with promptness orders for iron or steel to be delivered in San Francisco or any point within a radius of 200 miles of Fresno. The steel frame for the new Elks' building in Santa Rosa was turned out at the Burnett foundry as was all the steel and iron for the new White House building in Santa Rosa, planned by Architects Stone and Smith of San Francisco. The Elks were so pleased with Mr. Burnett's way of doing business that they sent him a personal letter of appreciation. Other jobs recently taken or completed by the Burnett Company are a building in Bakersfield, an addition to the Fresno brewery, and a four-story building in San Francisco, Hoyt Bros., contractors.

Has Many Steel Contracts

The Central Iron Works of which Mr. A. A. Devoto is president, has lately finished several large contracts and at the present time the company is fabricating steel for the following San Francisco buildings: The Commercial block, a five-story structure at the corner of Front and California streets, and the Proctor building at Jones and O'Farrell streets. Both of these structures were planned by Welch & Carey, architects; also the Commonwealth theater on Sutter street, near Fillmore, and the Holbrook building, designed by Nathaniel Blaisdell, architect, and about to be erected on Mission street, between First and Second streets. The last named is to be Class C and seven stories in height.

Back to California Street

The Western Building Material Company, which was located on California street before the fire, after which temporary quarters were taken at 340 Steuart street, San Francisco, is again back on California street in the Halsey building, No. 430, almost opposite the Merchants' Exchange building. The company has leased practically the entire second floor, which has been fitted up for the executive officers and their subordinates in a most attractive manner. The offices are light and airy and easily accessible.



Building for the Owl Drug Company, Mission Street near Second, San Francisco

Designed and Built by

J. A. ETTLER

According to the

Ettler-Sutherland Patent

A NEW SYSTEM OF REINFORCEMENT

OFFICE:
302 ATLAS BUILDING
SAN FRANCISCO

Russell & Erwin Manufacturing Company

New Britain, Conn.

Wells-Fargo Building, Portland, Ore.

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Telephone,
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San Francisco, Cal.

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and only one way to get best results from the use of
PRISM GLASS
and that way is to specify Luxfer Prisms to be installed by the
AMERICAN LUXFER PRISM Co
INGERSON & GLASER CO.
MANUFACTURING AND SALES AGENTS
245 OAK STREET, San Francisco, Cal.

Empire Plaster Company
Manufacturers of Hard Wall Finishing and Dental Plaster
SPECIFICATIONS FOR EMPIRE HARD WALL PLASTER

Metal lath three-coat work:
First or scratch coat—One part Empire hard wall plaster fibred, two parts sharp clean sand (fresh water sand preferable). Thoroughly mixed and applied within two hours after mixed.
Second or browning coat—One part Empire hard wall plaster, two parts clean sharp sand floated up even with grounds.
White or putty coat—One part Empire finishing plaster, three parts line putty gaged with hard wall plaster.
Sand finish—One part Empire hard wall plaster, two parts clean sharp sand.
Wood lath, two-coat work—One part Empire hard wall plaster fibred, two parts clean sharp sand (fresh-water sand preferable), mixed thoroughly and applied within two hours after mixing.
White coat and sand finish same as for metal lath,
Finishing coat should be applied within 48 hours after first coat is put on.

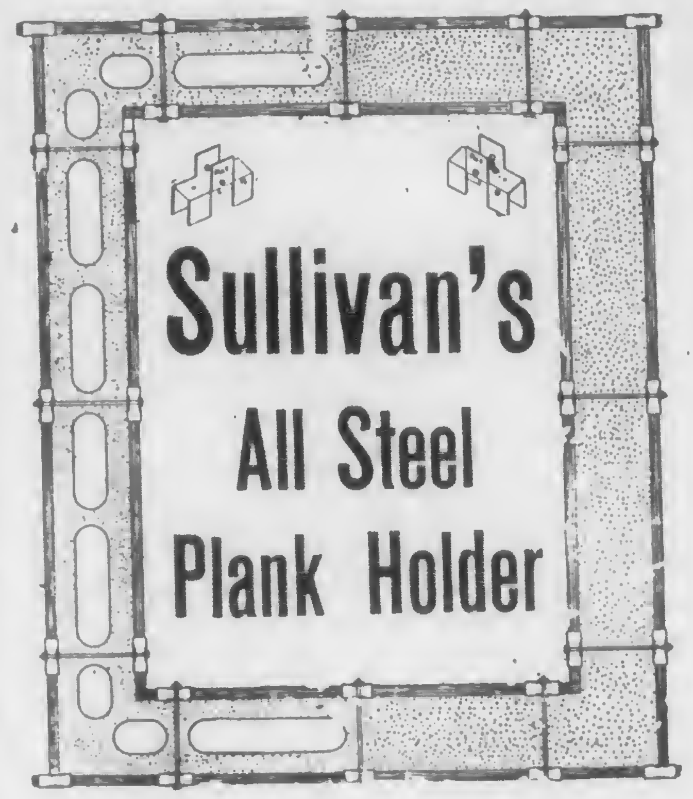
16th and Harrison Sts., San Francisco
Oakland Warehouse { ADAMS' WHARF
Phone Oakland 6821

THOUSANDS IN USE IN LOS ANGELES!
ASK YOUR NEIGHBOR ABOUT THEM
IMPROVED CLIMAX SOLAR HEATER
ABSOLUTELY RELIABLE

WHY let the sunshine go to waste, and your money too, when at trifling expense you can put in your home an IMPROVED CLIMAX SOLAR HEATER that will furnish hot water from sunshine alone—winter and summer—for your bath, laundry, and all domestic purposes, without cost, damage or delay?
It can be connected with the range, furnace or gas heater to insure hot water on rainy days, and when so connected saves the expense of a kitchen boiler. It insures a cool house during the hot season. Let us figure with you on your hot-water problem.

SOLAR HEATER COMPANY
342 New High St. - - - - - LOS ANGELES

You can save money
On every concrete structure—by using



Sullivan's Plank Holder does away with nailing and makes the use of lumber again and again, possible. This device, which is patented, is easily and quickly applied and removed and saves its cost over and over.—Other contractors are saving money by its use. Are you? WRITE FOR BOOKLET
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Structural Steel
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Coke, Etc.

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210 BATTERY STREET
San Francisco, Cal.

Gets Heating Contracts

The Machinery and Electrical Company of Los Angeles, and a regular advertiser of the Architect and Engineer, has been given the contract for heating and ventilating all five of the new school houses to be erected in San Jose. The contract for the High school is $14,800 while the bids on the other four buildings average $4,446 each.

New Artificial Building Stone

A new artificial building stone has been placed on the market and will have its first local application, with one exception, in the Fairmont hotel in San Francisco, in form of partition walls which are at once fireproof and soundproof.

It is a new invention brought from Australia, where it has been extensively employed by Mr. Frank Hudson. A company has been formed to exploit the new material and it has already received wide recognition.

Technically it is described as an artificial building block to be used as a substitute for reinforced concrete in the construction of building walls; the object being the production of a block which will interlock with adjacent vertically disposed blocks and be held to adjacent side blocks by a bond joint, the block being strengthened by tie rods extended horizontally or longitudinally through bores formed in the block. In addition to the rods the blocks are further secured by tongue and groove formations and by corresponding borings locked with cement. Certain other blind openings form vacuums which render the stones fireproof and sound proof.

Mr. Hudson is now engaged in manufacturing the stone at the Fairmont Hotel, and he will be pleased to explain its merits to architects and owners.

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Stair Work

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Wire Guards

Elevator Enclosures and Cars

Electrolier, Fresno City Hall

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SAN FRANCISCO

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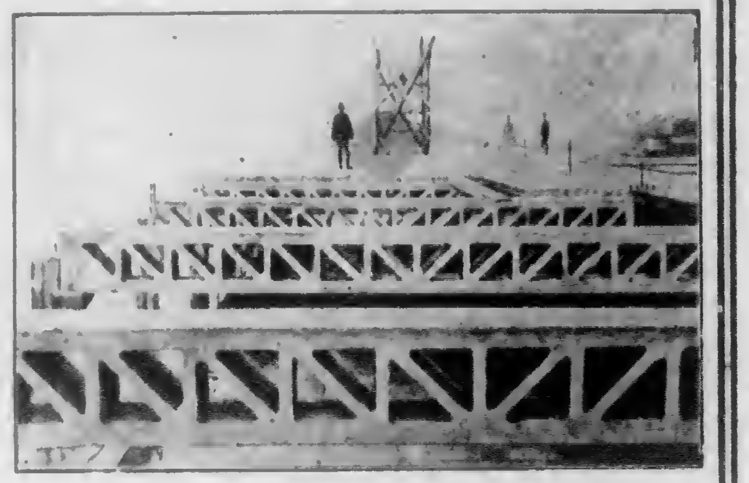
FACTORY BUILDING FOR TEXTILE MACHINE WORKS Reading, Pa.



Exterior of Building

Showing "Tiny" floor beams 40,000 sq. ft.

CONCRETE & STEEL ENGINEERING CO.

CONSULTING ENGINEERS

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Owners of Visintini, Franke, Eggert and other Patents.

Specialties { Buildings, Foundations, Factories, Bridges, Power Plants, Sewerage, Sewerage Disposal, Purification.

The "TINY"-VISINTINI SYSTEM of Reinforced Concrete is the best, most economical, strongest and most efficient Reinforced Concrete System in the world.

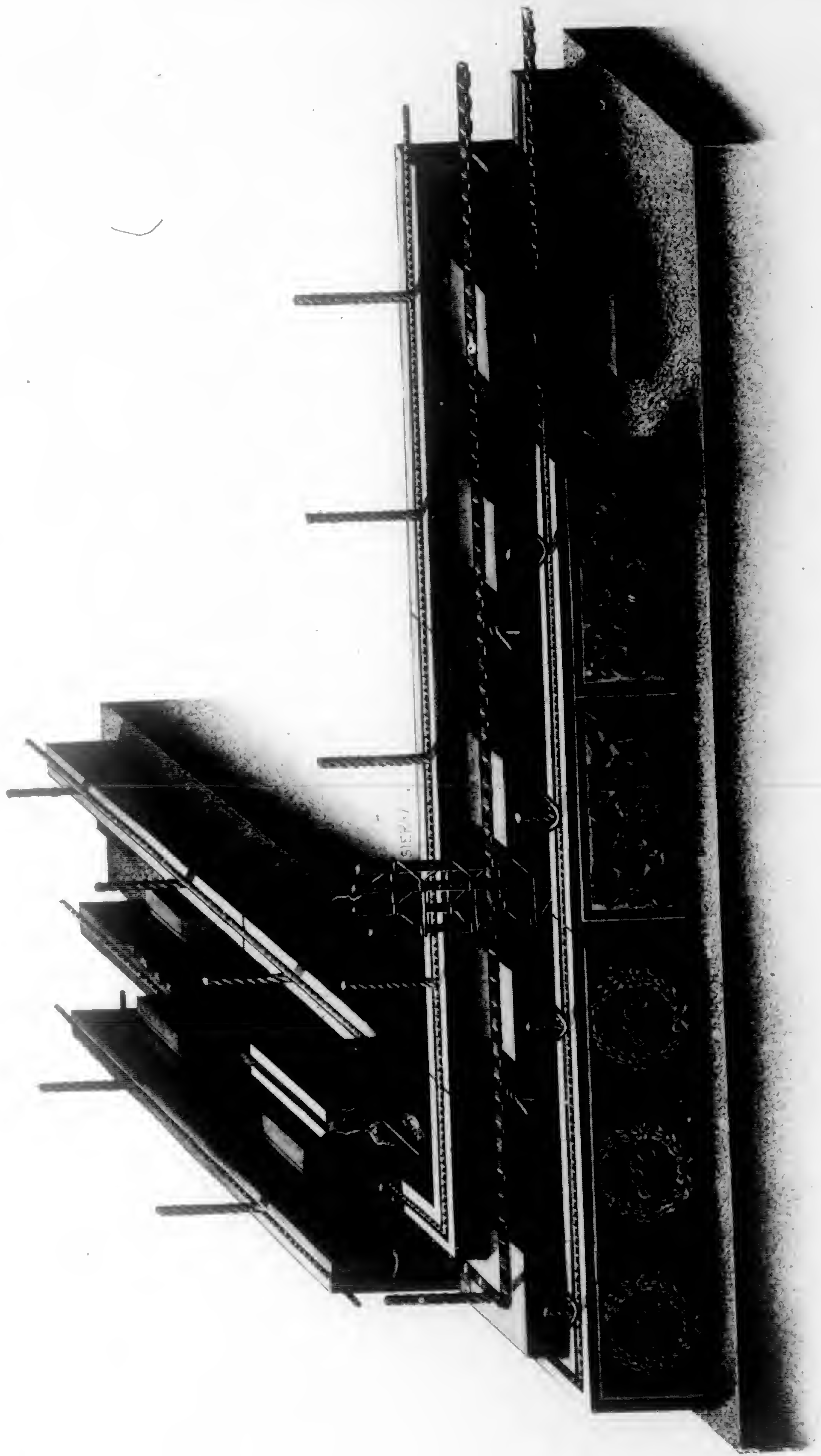
The System saves 25% in Concrete, 10% in Steel, 75% in Form and Carpenter Work.

It can be applied in every form of building, as well in light as in heavy constructions. For instance, as for 500 lbs. live loads and again for spans from 10 to 120 feet. We have more than 75 Concessionaries in all parts of the world, among these, Representatives in New York, Chicago, Philadelphia, Los Angeles, San Francisco, Berlin, Munich, Vienna, Paris, St. Petersburg, Zurich, Cairo, etc.

Testing of Bridge Girders

Bridge in Berzdorf, I. S.

WANTED Contractors TO TAKE LICENSES IN ALL CITIES AND TOWNS IN NORTH & CENTRAL AMERICA. MOST FAVORABLE CONDITIONS



This Perspective View Illustrates the Interlocking Stone Company's Patented System of Reinforced Interlocking Concrete Construction and Shows the Breaking of Joints, Horizontally and Vertically. (See Opposite Page for Details.)

ANNUAL MEETING OF INTERLOCKING STONE COMPANY.

Price of Stock Advanced.—Bright Outlook for a Prosperous Year.

The Interlocking Stone Company, Inc., held its first annual meeting in Oakland Saturday, June 22, practically every shareholder being represented, either in person or by proxy. Those present were enthusiastic and a most successful year was predicted by the officers and managers. So great has been the demand for stock that it was decided to advance the price to five dollars, which price will shortly be increased again to $10. Those who desire to purchase stock should communicate with the officers of the company without delay.

The secretary read his report as secretary and treasurer, showing the flourishing condition of the financial affairs of the company.

Manager Peterson reported upon the possibilities of the Interlocking Stone Company, its plant, machinery, and products. He said the composition of the stones made under the Peterson system, is the best as a building material to be found anywhere, in strength, flexibility, durability, etc., and he was positive that no improvements could be made upon the system of manufacturing stones. He reported that the company's mixing machine is "par excellence", with no competitors, in fact it is the only mixer that will give a thorough, uniform mix and give five distinct movements. The block machine and molds, when completed, would, he declared, astound the mechanical world, for their rapidity and perfection. The report was listened to very attentively and highly appreciated and gave the stockholders a firmer belief in the success of this enterprise.

The meeting was addressed by President Niggle, Vice-President Schiller, Manager Peterson, Director Wallace and Stockholders H. Andon, H. W. Bowman, M. G. Scribner, J. A. Reeder and the secretary, and from the remarks made, the stockholders could very plainly understand, that the speakers felt they had faith and great hope in the success of the company in the near future, and that nothing like it was on the market at the present time as an industrial investment.

A vote of thanks was extended to Mr. J. G. Niggle, the retiring president, for his energy and efficiency in performing his duties as president of the company.

The following directors were elected for the ensuing term: G. A. Peterson, F. V. Schiller, D. O. Wallace, M. G. Scribner and A. Weimann. The newly elected directors met and elected the following officers for the ensuing term: G. A. Peterson, president, D. O. Wallace, vice-president, F. V. Schiller, manager and A. Weimann, secretary and treasurer.

The Keying or Interlocking of Building Stones.

(See illustration on opposite page.)

Numerous methods have been devised to impart to walls of buildings, etc., strength and the property of "hanging together," but nothing heretofore tried equals our simple, yet great, invention, of keying or interlocking each stone or block of a wall with its neighbors, so that when the wall is completed, it is practically all one stone.

It should be clearly understood that this interlocking is not only horizontally and vertically, but transversely built through the thickness of the walls. Add to this the steel reinforcement as used by the Interlocking Company and it will be found that a building so constructed is strong and safe in every part.

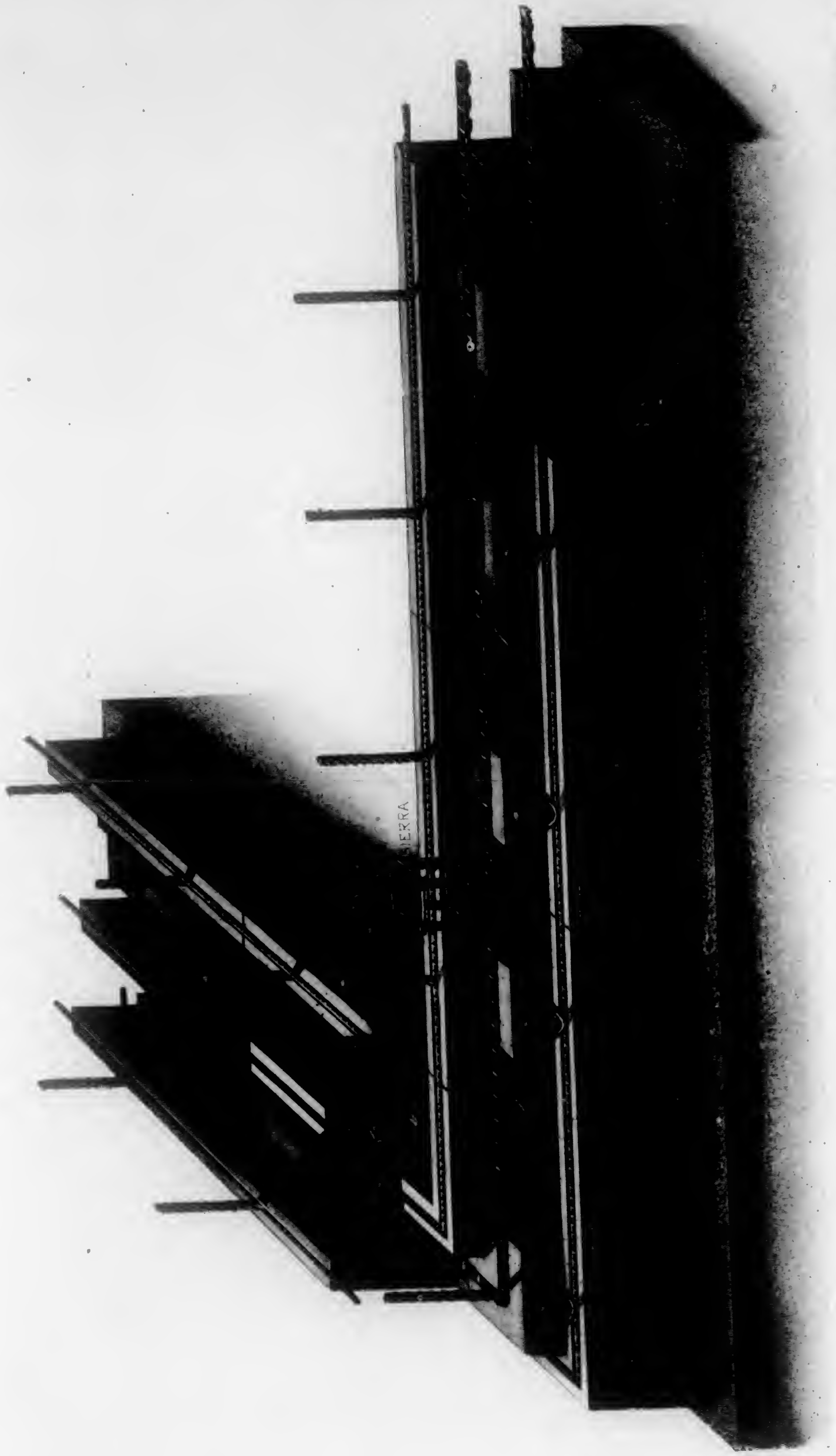
The stones can be made long before using and are consequently perfectly hard. Every stone is under derrick size, so that two men can handle the largest stone when placed in position, cemented and reinforced. We know then that this part of the wall is safe, and as the work progresses, we know that every part of it is strong and safe, and finally when the building is completed we know that it has been built in a safe and substantial manner throughout.

The falling of a building in process of erection with Interlocking Cement Stones, simple or reinforced, is an utter impossibility, and herein we stand ahead of all and every other method of building in stone, brick, concrete or wood.

A SOUND INVESTMENT
BUY SHARES IN THE INTERLOCKING STONE COMPANY

July 1 shares were advanced from $3.00 to $5.00. In a few weeks they will be
RAISED TO $10.00
Investigate and be convinced. Nothing better on the market today. : : : : : : :

INTERLOCKING STONE COMPANY
563 Ninth Street = OAKLAND



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Saves Time and S
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VOL. X No. 1

IN THIS NUMBER

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THE PROFESSIONAL PRACTICE OF LANDSCAPE ARCHITECTURE AS SEEN BY WILBUR DAVID COOK

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Ogden — Wright & Sons Bldg., Electric 25 H. P.

Salt Lake City—Knutsford Hotel, 20 H. P. Electric Passenger.

By fighting the Elevator Trust we have saved the owners of buildings thousands of dollars

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Our fight for the right to manufacture is your fight.

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You're absolutely sure to get just exactly the roof you specify, without one second's worry or watching on your part. That's the reputation W. J. Watson has built up—and it's the reputation we're proud of and strive to live up to—the absolute confidence of the Architect and Contractor.

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MARVIN "	California, near Drum
BELSHAW WAREHOUSES	Beale and Fremont, near Mission
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BABCOCK BUILDING	California and Battery Streets
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Using the most modern equipment

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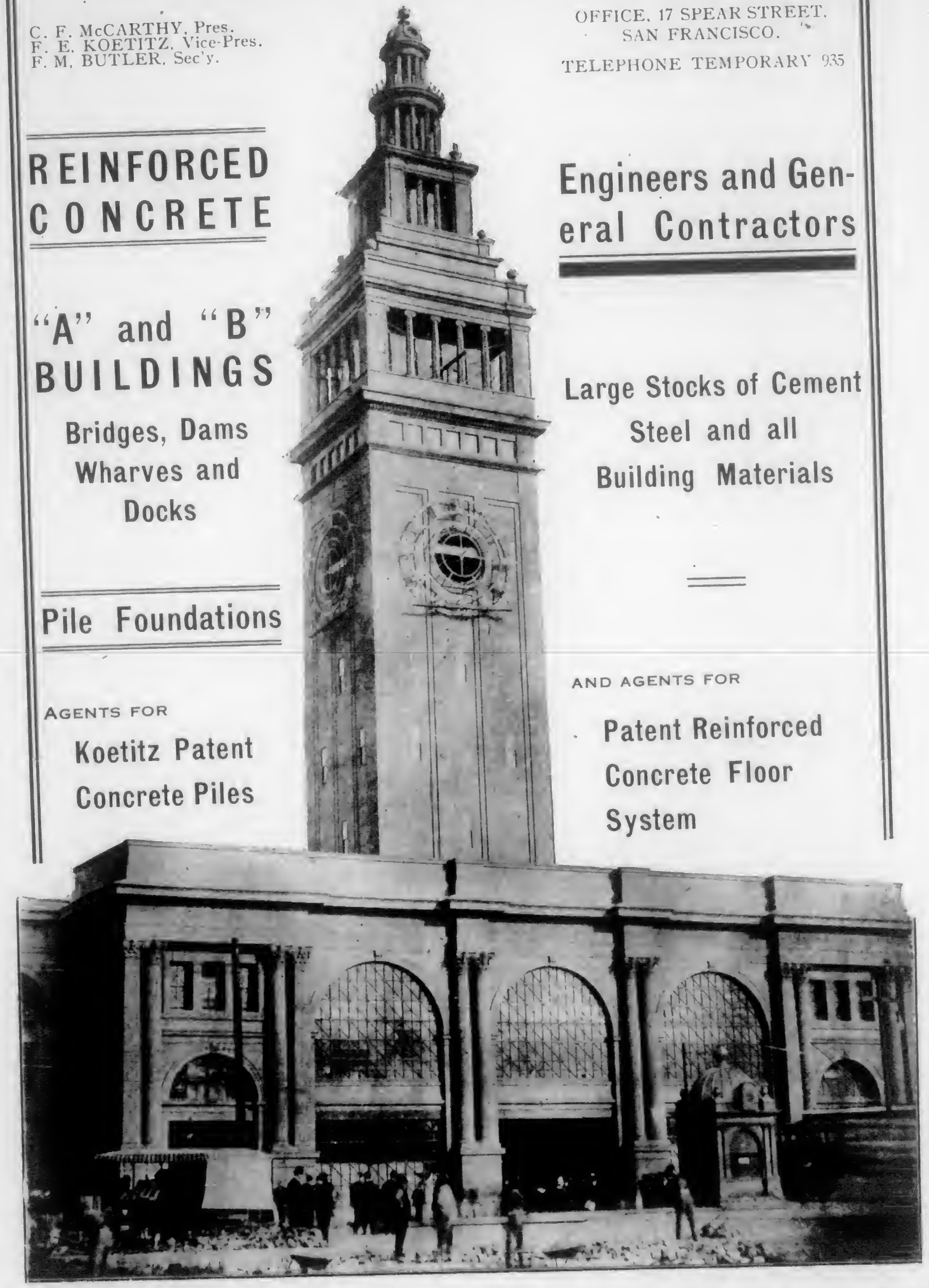

REINFORCED CONCRETE TOWER OF UNION FERRY DEPOT BUILDING, REBUILT BY THE PACIFIC CONSTRUCTION COMPANY

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Central Iron Works....625 Florida St., S. F.
Western Iron Works.....125 Beale St., S. F.
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Joshua Hendy Iron Works, 75 Fremont St., S. F.
Walter Henderson.......110 Bush St., S. F.
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Palace Hardware Co., 456 Golden Gate Ave., S. F. 638 Market St., S. F.
Russell & Erwin Mfg. Co., 933 Monadnock Building, S. F.

BURLAPS, CANVASES, ETC.
Richter Mfg. Co., 2 Franklin Ave., Tenafly, N. J.

CAPITALS, MOULDINGS, ETC.
Western Builders' Supply Co., 4th and Natoma Sts., S. F.

CEMENT
Pacific Portland Cement Co., 1024 Franklin St., S. F.
Bowring & Co.........118 Battery St., S. F.
Barneson & Hibberd Co.,..175 East St., S. F.
Girvin & Eyre, Merchants Exchange Building, S. F.
W. R. Grace & Co....614 California St., S. F.
G. W. McNear........210 Battery St., S. F.

CEMENT—Continued.
Western Building Material Co., 430 California St., S. F.
Maldonado & Co., Inc., 268 Market St., S. F.

CEMENT AND PLASTER CONTRACTORS
Van Wagner Bros. ....Santa Cruz

CEMENT TESTS
Irving C. Allen..Beach and Mason Sts., S. F.

CONCRETE REINFORCEMENT
Corrugated Bars, sold by Jno. B. Leonard, 623 Monadnock Bldg., S. F.
Kahn Bars, sold by Couchot & Thurston, San Francisco, and Heber and Thayer, Los Angeles.
International Fabric & Cable, represented by Western Builders' Supply Co., 4th and Natoma Sts., S. F.
High Carbon Steel Bars, sold by Woods & Huddart............11 Front St., S. F.
Fabricated Structural Steel, sold by Gilhuly & Ambler..........Atlas Bldg., S. F.

COTTON FABRICS
California Cotton Mills Co., 310 California St., S. F.
Bemis Bros. Bag Co., 17th and Wood Sts., Oakland.

CRUDE FUEL OIL
Associated Oil Company....Kohl Bldg., S. F.
Valvaline Oil Company, 440 Brannan St., S. F.

DAMP PROOFING COMPOUND
Hydrex Damp Proof Paint, sold by Boyle-Luey Co...Monadnock Bldg., S. F.

ELECTRICAL CONTRACTORS
California Electrical Works, 642 Folsom St., S. F.
Century-Klein Electrical Co., 623 Sansome St., S. F.
Decker Electrical Co...157 Minna St., S. F.
Standard Electrical Construction Co. 60 Natoma St., S. F.
Steger Electrical Works........Fresno, Cal.

ELEVATORS
Van Emon Elevator Co.46 Natoma St., S. F.
Otis Elevator Company, Stockton and North Point, S. F.

ENGINEERS
W. W. Breite...925 Golden Gate Ave., S. F.
Couchot & Thurston..604 Mission St., S. F.
Schulz, John..........779 Market St., S. F.
Leonard, John B..623 Monadnock Bldg., S. F.
C. F. Wieland, 911 Mutual Savings Bank, S. F.

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Pacific Fire Extinguisher Co., 507 Montgomery St., S. F.
Paul Brant........No. 9 Mission St., S. F.
Badger Fire Extinguisher Co., 507 Montgomery St., S. F.
Goodyear Rubber Company, 573-579 Market St., S. F.

FIREPROOF WINDOWS
A. C. Rulofson Sheet Metal Works, Monadnock Building, S. F.
San Francisco Cornice Co., Bryant St., bet. 9th and 10th Sts., S. F.

FIREPROOFING
Clinton System, L. A. Norris, Agt., 833 Monadnock Building, S. F.
Hudson Patent Block Co...172 East St., S. F.
Roebling Construction Co., 476 Eighth St., S. F.
Demolith Co.......310 Clementina St., S. F.
Continental Fireproofing Co., 908 Mutual Bank Building. S. F.
Western Art Tile Co., Pacific Elec. Bldg., L. A.
Western Expanded Metal Co., 2265 California St., S. F.

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Hardwood Interior Co., 873 O'Farrell St., S. F.

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Baker & Hamilton......900 Third St., S. F.
Hercules Gas Engine Works........Alameda

ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Cotton Bros. & Company, Monadnock Building, S. F. Bacon Building, Oakland
American-Hawaiian Engineering & Construction Co., Ltd......332 Turk St., S. F.
American Dredging Co...Bacon Blk., Oakland
Long & Hoyt.....Monadnock Building, S. F.
T. A. Pettus, Arcade Building, 109 O'Farrell St., S. F.
The James Stewart Company, 14 Grant Ave., S. F.
American Construction Co. 896 Eddy St., S. F.
The Lindgren-Hicks Co., 2d Floor Old Humboldt Bank Bldg., S. F.
Delmar Smith Co........Kohl Building, S. F.
Worswick Street Paving Co.....Fresno, Cal.
Pacific Construction Co...17 Spear St., S. F.
Richards-Neustadt Construction Co., 208 Stimson Building, Los Angeles 237 Monadnock Building, S. F.
H. L. Peterson......111 O'Farrell St., S. F.
Burrell Construction Co., 513 Central Bank Building, Oakland
Roberts Bros. Co., 311 Central Bank Building, Oakland
John C. Ince Company. 406 Sutter St., cor. Stockton, S. F.
Hoyt Bros., Builders' Exchange, S. F., and Santa Rosa
Healy-Tibbitts Construction Co., 106-11 Hansford block, S. F.
O. M. Bullock.....1420 Broadway, Oakland
Shaw Company.......11 Union Place, S. F.

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Western Inspection Bureau, 621 Monadnock Building, S. F.

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Cal. Art Glass Works..938 Howard St., S. F.
Holt, Habenicht & Howlett.269 Fell St., S. F.
San Francisco Art Glass Works, 944 Mission St., S. F.

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The Hamilton Grate, 177 Twelfth St., Oakland

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Empire Plaster Co., 16th and Harrison Sts., S. F.
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Chubbuck & Harris.......Atlas Bldg., S. F.

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Pacific Blower & Heater Co., 3261 17th St., S. F.
Gilley-Schmid Co., Inc., 13th and Mission Sts., S. F.

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Schastey & Vollmer, 1930 Van Ness Ave., S. F.
Taylor & Sinclair Co., Inc., 1464 Bush St., S. F.

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The Angle Lamp.—Bocsch Lamp Co., 1135 Mission St., S. F.
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Steiger and Kerr Stove and Foundry Co. 18th and Folsom Sts., S. F.
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Victor Stanquist & Co..65 Landers St., S. F.
American Pacific Construction Company, 7th and Townsend Sts., S. F.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

REINFORCED CONCRETE APPLIANCES
Concrete Reinforcing Fabric, made by American Steel & Wire Co.........S. F.

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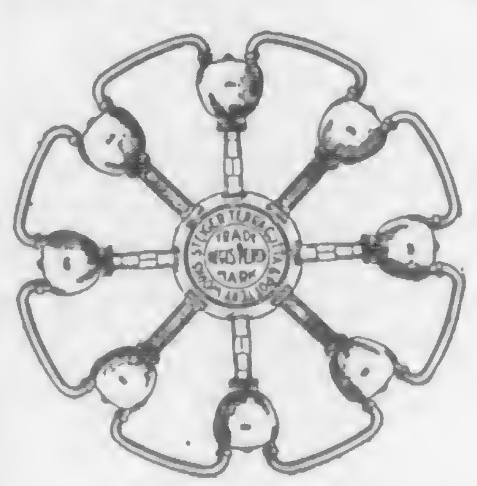

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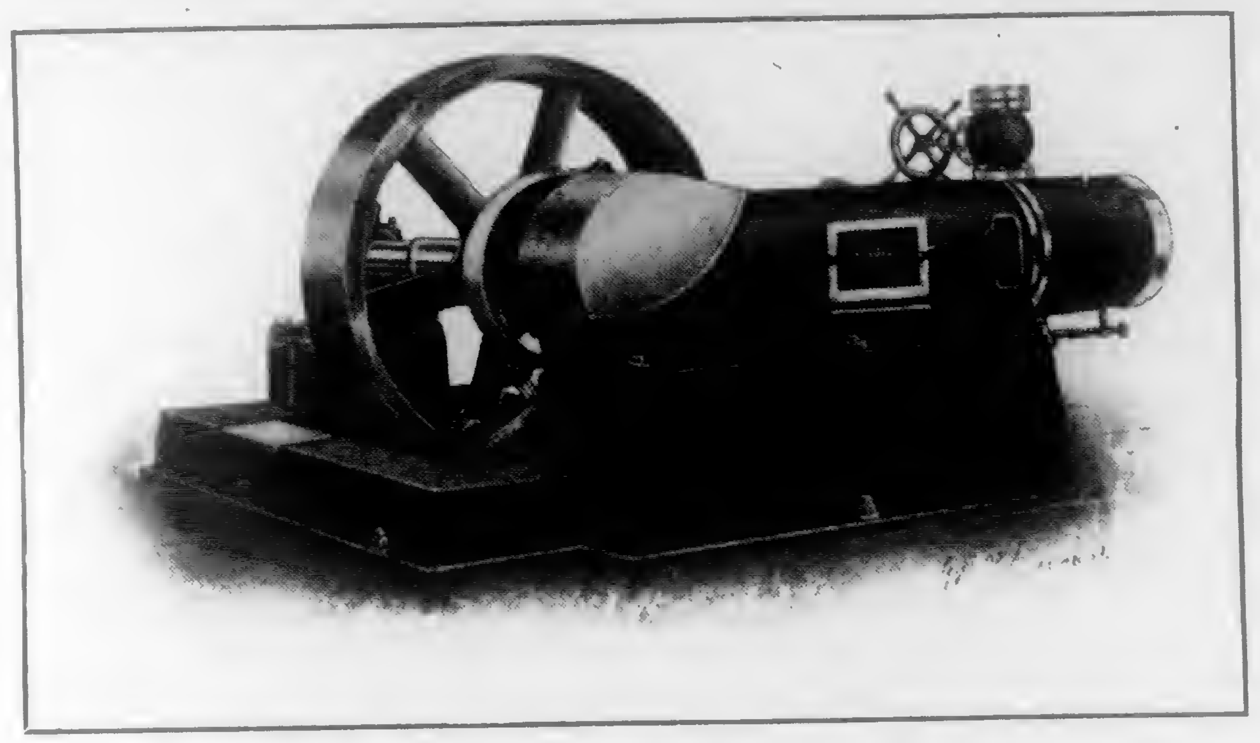

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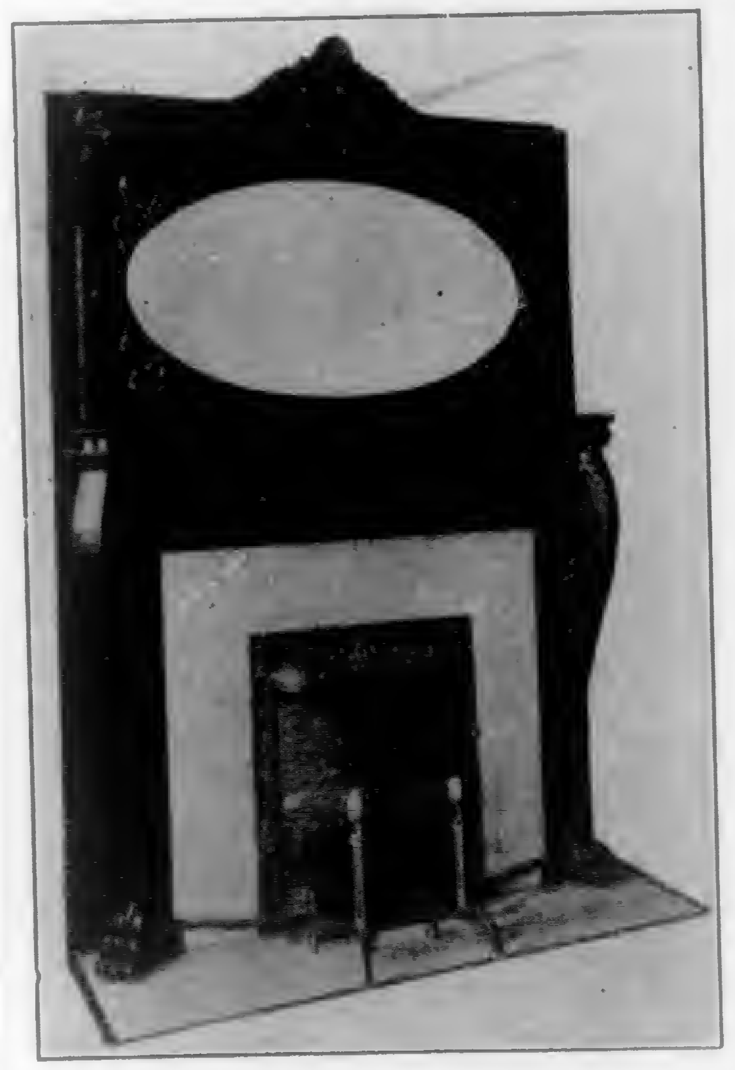

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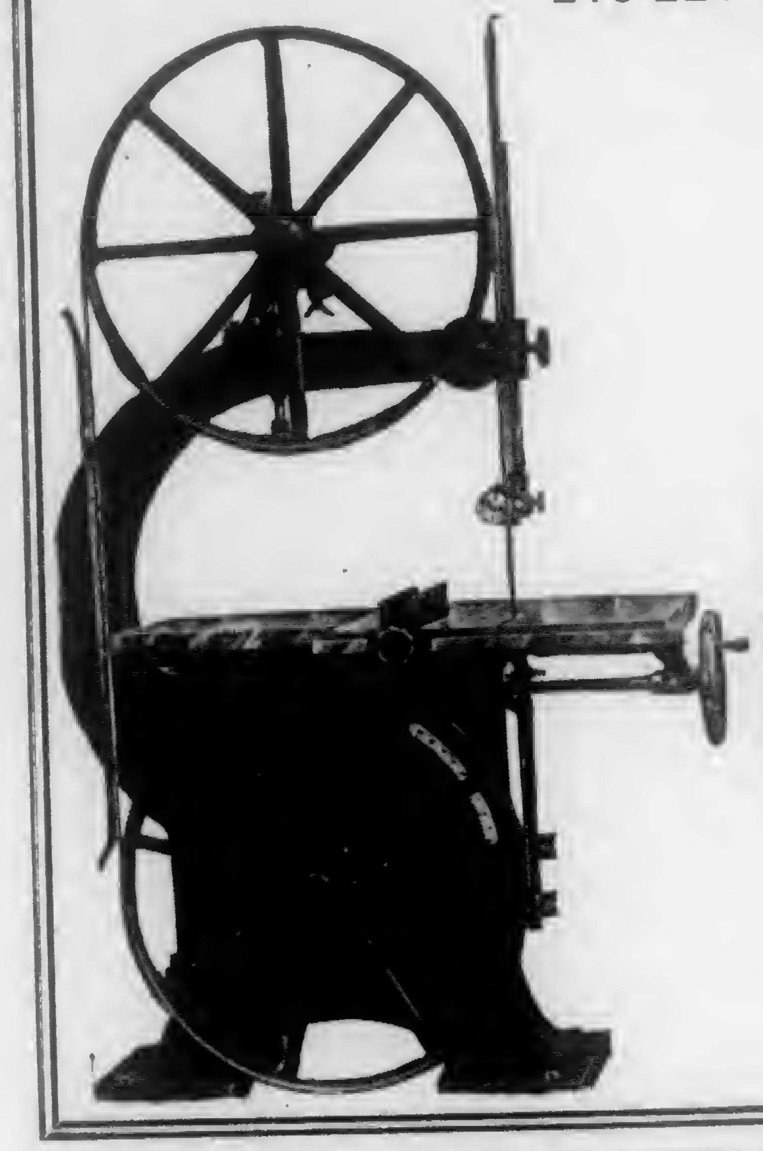

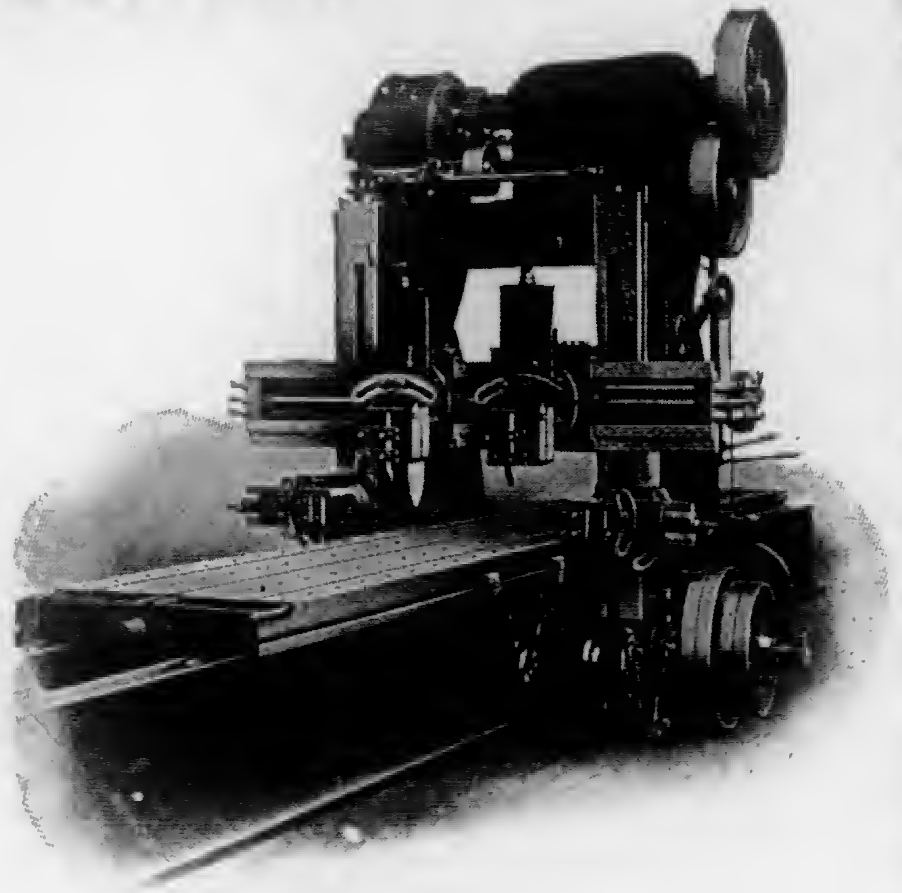

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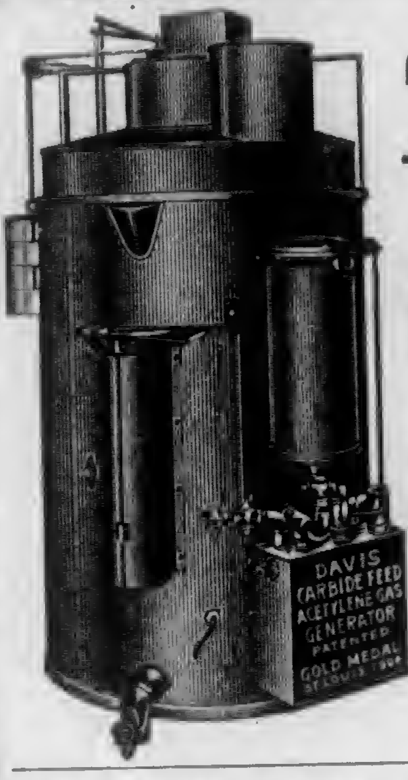

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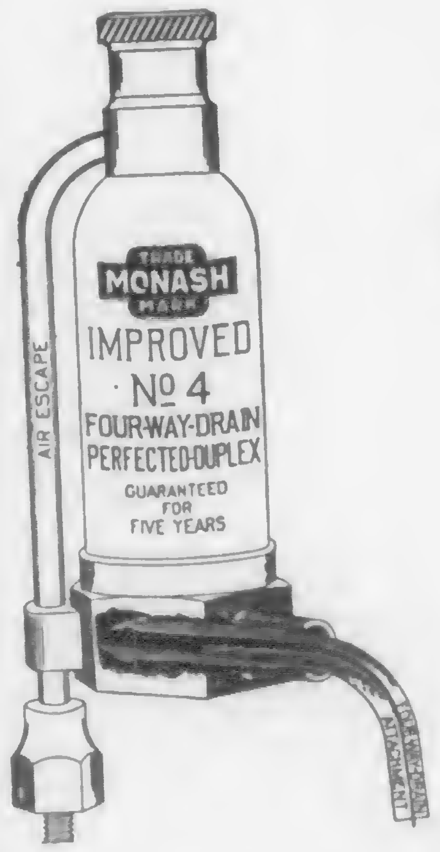

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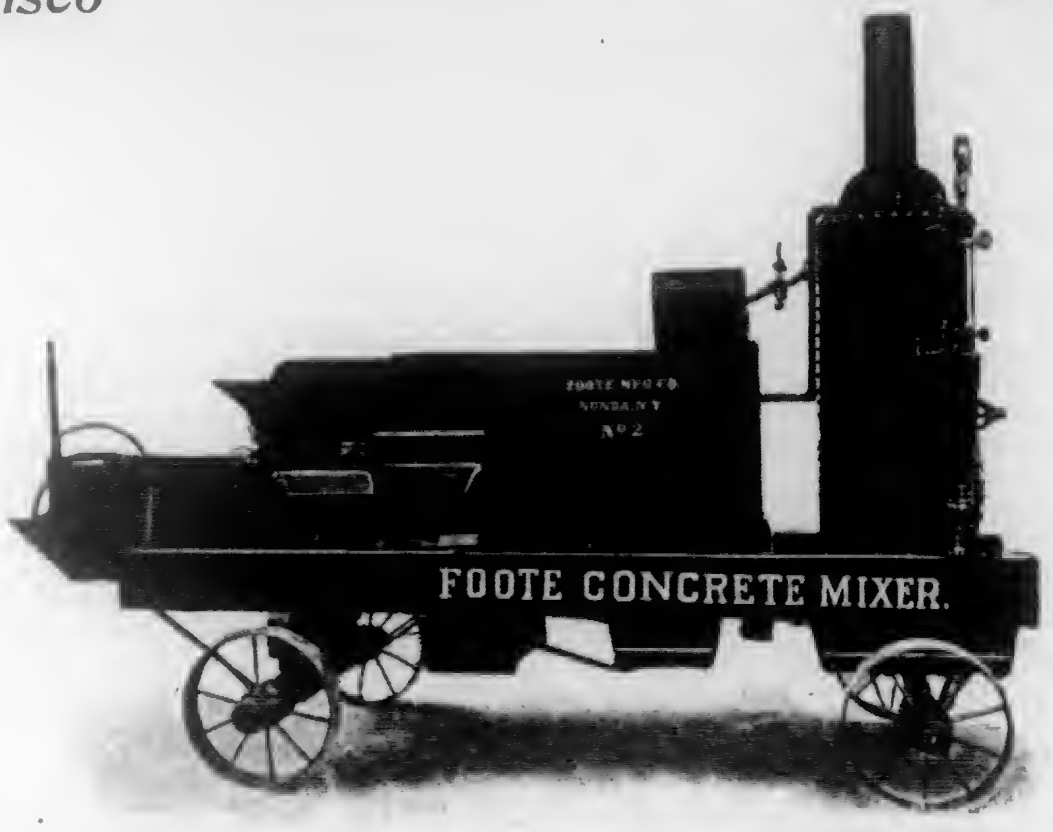

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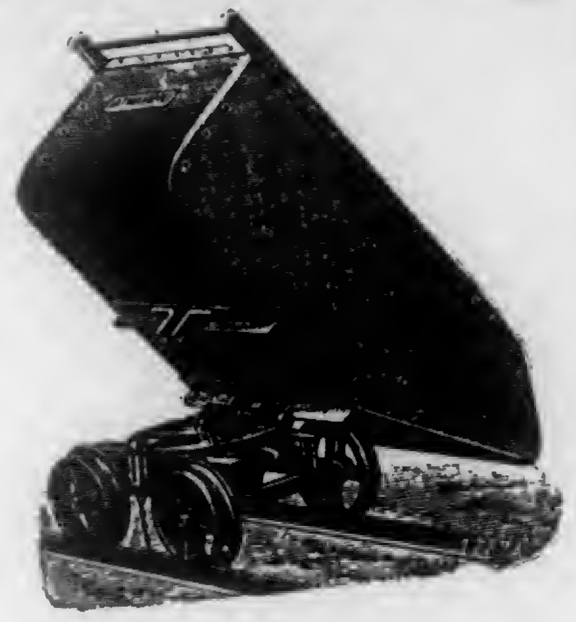

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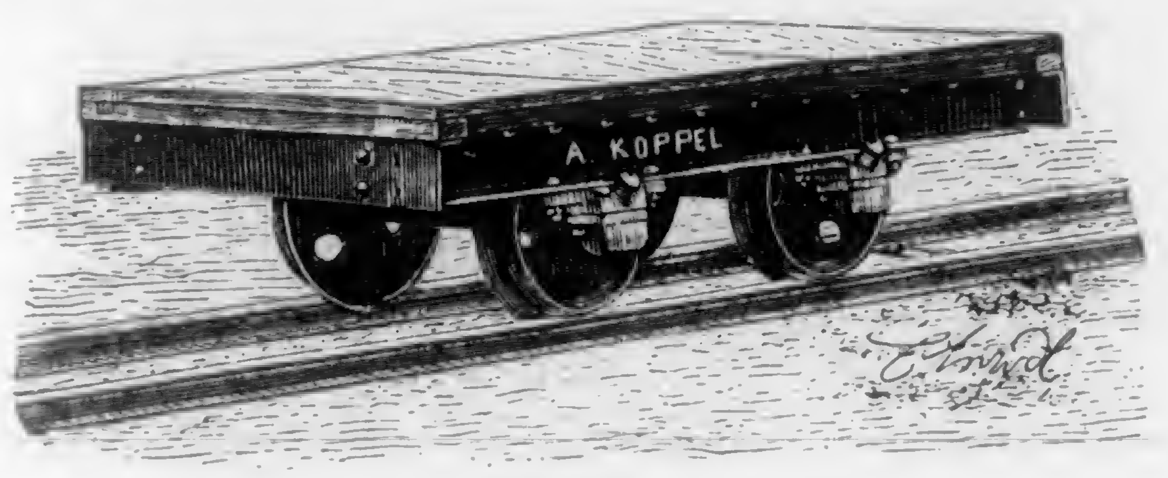

Fig. 109

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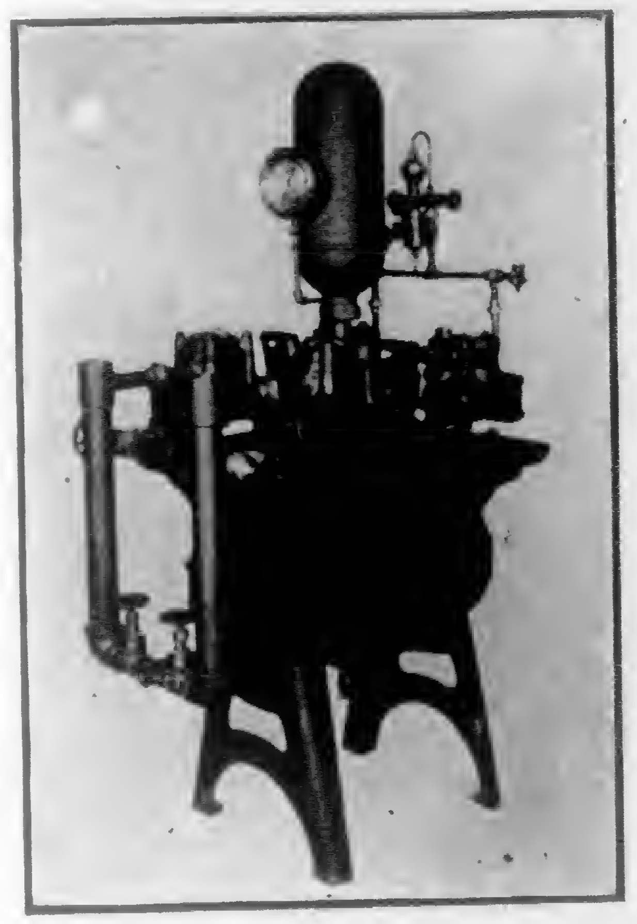

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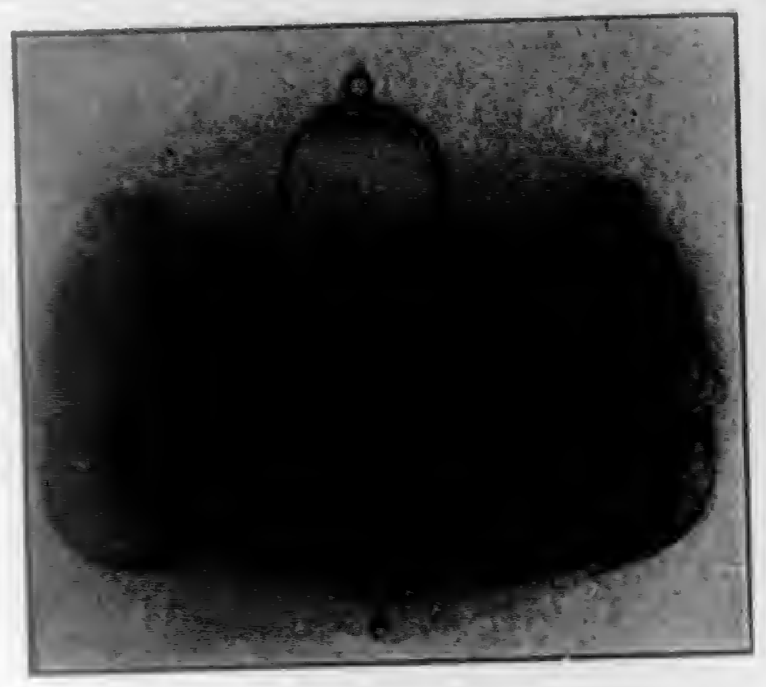

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Design for the New Palace Hotel, San Francisco

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THE

Architect and Engineer

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VOL. X. AUGUST, 1907. No. 1.

Civic Pride

By W. GARDEN MITCHELL, Architect

"HE WHO steals my purse steals trash, but he who steals my good name, takes that which does not him enrich and leaves me poor indeed."

In some such language speaks England's greatest poet. Now that which is true of individuals is also true of cities. Nevertheless there are among us those who oppose the expenditure of public moneys on city beautifications and utilities on the ground that it is money wasted, an unremunerative investment. Had the quotation run, he who steals my good name steals trash and so forth, those who argue on such lines might have some logic in their reasoning, but the bulk of human experience is against the arguments of such who would maintain that mere commercialism is that ne plus ultra of economies. Shut out the light and air from your streets, congest your business and all effort within narrow limits, and raise your land values one, two or three hundred per cent. There! say the wise heads, is an economy; for to them it is more than economy it is fortune; but what of the unborn generations, the value of whose capacity for work is to be lowered millions upon millions, because the generation who bore it was denied a sufficiency of the two primary essentials to health and strength—sunshine and air. People who argue against wide streets or limitation to height of buildings if streets are narrow; people who will not spend money on the beautification of a city because it is an extravagance, that cannot be afforded are of the penny-wise pound-foolish class and should have no voice in the administration of public affairs. Talking civicly, he who impoverishes my purse for the improvement of my city takes that which I can best afford, even at some inconvenience, but he who deprives me of my sunlit streets my pure and health-giving air, my clear and sparkling water, my elevating surroundings of architectural buildings, my public parks and flower adorned squares and merry fountains deprives me of that which does not him truly enrich and leaves me as citizen poor indeed.

In the days of ancient Rome they builded on the banks of the Tiber a great city, and through the generations it grew in strength and beauty, and doubtless it was fashioned of great blocks of stone and massive beams of timber; but it is not the hand nor the head alone that builds a great city, it is also the heart. Now to the Romans was given the heart, for they were of the race of those who had endured the wilderness and shared the lair of the she-wolf; and so fierce a heart had they, for Rome, their native city, that it was all in all to them; even the temple was not more sacred and in distant lands they required but to mention the name of their city, to command respect. To treat with contempt a Roman was a

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Stone and concrete; steel and timber—all are good, but without civic pride we build in vain. He who builds only for himself builds for a fool, but he who builds delighting that men may praise the goodness of the thing, even when he is no more, builds well; in such manner we pray that the city of San Francisco may rise again from its ashes.

Then again there are those who say that art and commerce are incompatible, but to disprove this we have Venice at its best, the world's port of commerce and the Queen City of the Adriatic. San Francisco, a beautiful city, perhaps. God made the country and man the town. He is never on the road to reform who does not suspect his error. Now I have lived in San Francisco before there were any ten-story buildings and I have traveled in the interim into distant lands and seen many cities fair to look upon and some very ugly, and by your kind permission I say San Francisco was neither of these. That which God has made is indeed fair but the part man has contributed is quite ordinary. Let us know the truth and the truth will make us free. High up in the towers of the ancient cathedral of Mexico you look out upon a city fair and beautiful. At your feet the civic center, the Zocola; beautiful with trees and flowers, benches for repose. Gleaming fountains and for the ear sweet music. All around are stately buildings; beyond the Alameda, equally beautiful; the Paseo de la Reforma with its trees and green sward and statuary, the Castle of Chepultapec, the Garden of San Domingo and streets and plazas everywhere beautiful in architecture and never-ending interest. Then of course we have Paris, the model and mirror of a perfect modern city, and many others that we shall not cite. What is the commercial value to Paris of its beauty? Incalculable.

From my same watch-tower on Nob Hill I look out in the dreamy twilight when the sun is low, and all that is real is shadowy, and place such points of interest to my liking. Union Square I see a beautiful garden such as that enchanting plaza de Armes at Guadalajara, planted as if the gardener had been trained in Eden (not that absolutely worthless arrangement of trees they have in the real Union Square). Along its sides I see first the Academy of Art and fronting it The School of Architecture and Engineering, and beyond the orange and blue mosaic of some stately dome competing in color with the sky. From Union Square to Van Ness avenue stretches the Alameda and from the cool recesses of its foliage on the fitful breeze comes the sound of music; on many seats and along its endless and varying ways, among fountains and works of the sculptors art, I see moving an enchanted throng as if perchance the poor benighted people of San Francisco had been permitted to enter the Garden of the Gods, or perchance that a portion of the Golden Gate Park had been dropped into the center of the city for their daily not weekly enjoyment. Van Ness avenue has become a boulevard, a miniature Champs Eleysee or Paseo de la Reforma, and so I wander on to other tree-lined walks, plazas with flowers and fountains, benches and music, bright lights, pleasing architecture, beautiful domes and towers, and even from that most uninviting region, the Potrero, I fancy I can see the moon gleaming on a canal that reaches from the civic center to the bay, and can hear the splash of oars and the twang of the guitar, and so on through the Mission endless points of interest, in streets and plaza. I can see in this hazy twilight, all around the everlasting hills girding the city even as a jeweled belt, to enhance the beauty of a Queen. For indeed there is the Queen City of the Tranquil Sea, but she sits as yet among her hills, in her valleys and waits; for the time of her adornment is not yet.

The self-imposed hallucination passes, I look upon that which is, and behold from the point of beauty born of art it is indeed found wanting. No, the facts regarding San Francisco are these, that she is beautifully situated but that nothing from the bay to the Twin Peaks save the planting of Golden Gate Park has been done to take advantage of this splendid site. Four points for improvement suggest themselves as those on which we may first concentrate. The gateway to the town, or the open space and buildings to be created fronting the Ferry landing. This is most important and stamps upon the mind of the stranger entering our gates the sense of our importance. The civic center, clearing away sufficiently to bring into view the City Hall and such other civic buildings as may accrue from time to time. Extending the Park Panhandle to the civic center. Grouping of buildings and providing for open spaces around the new cathedral to be built on Nob Hill, and perhaps treating Van Ness avenue as a boulevard. Good plans for most of these have already been prepared if we could only get them adopted. As regards the style of architecture, that which has proved most attractive in warm and bright-skied countries such as Spain, Italy and further East, suggests itself as the model we should try to equal, leaving the styles of more northern countries to their own grey skies. Not perhaps as yet that perfect refinement of Greece, nor in all things the stateliness of Italy, but rather that poetic though less accurate architecture of Spain; to this let us add the color of the Moor of the Far East. And so having chosen, and with form erect, every sinew tense with civic pride, pride of our city, let us set the standard of our ambition well beyond our hope of attainment and with our faces gleaming as in the light of those fateful April evenings, struggle forward to the distant goal.

* * *

Contractor Bids Against Himself

A good story has been going the rounds of the Detroit papers regarding a contractor who submitted figures to a local architect covering the structural work in connection with a local building undertaking and was awarded the job. It appears that shortly afterward, forgetting that he had secured the contract, the builder called up the architect and asked why he had not been advised concerning his bid. The architect helped along the slight misunderstanding by joking about submitting so unreasonable an estimate.

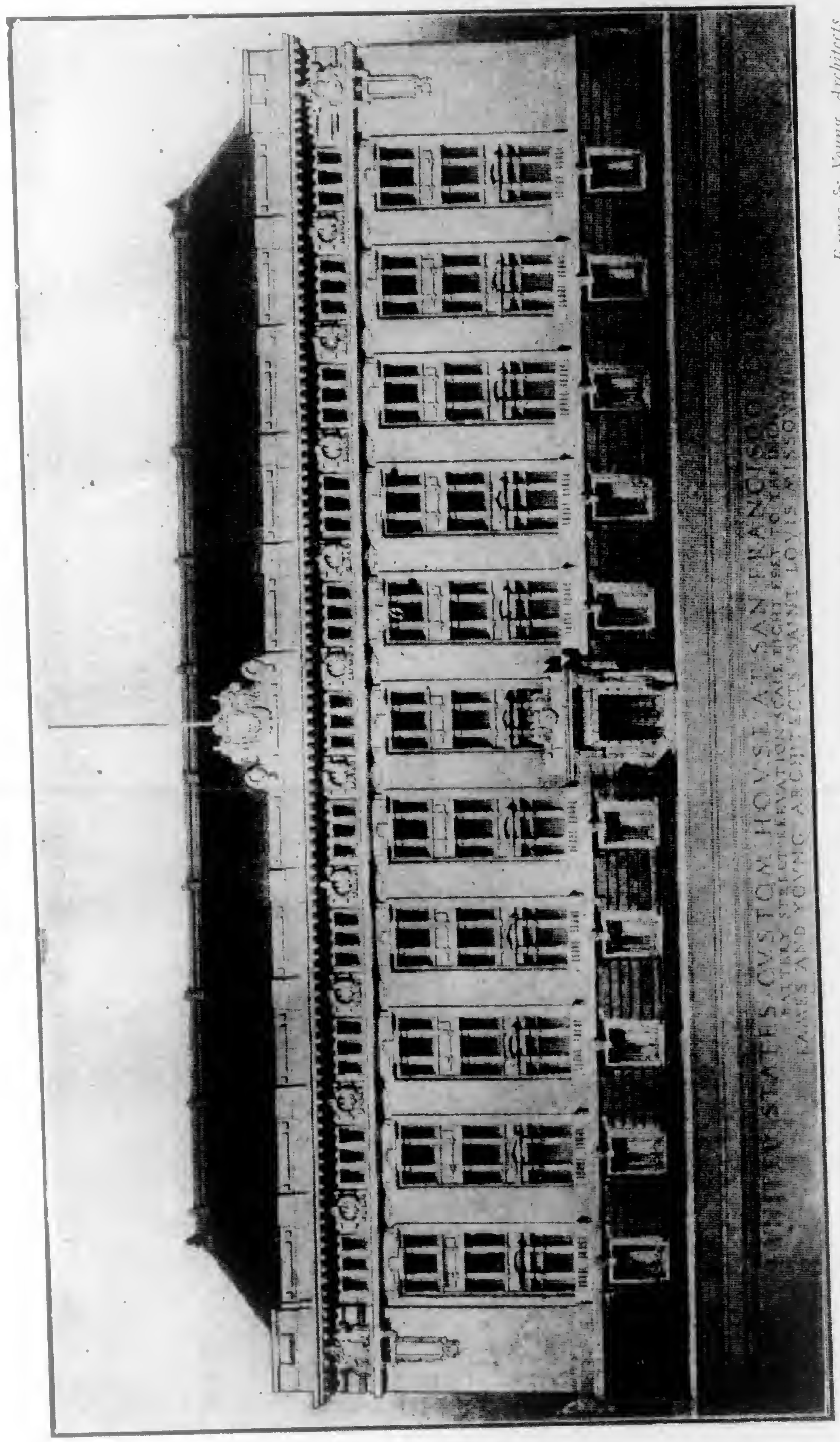
"Figure on that job again and send in your revised estimate and may be you can get it yet," said the mischievous architect. After scaling down his bid as much as he felt he could afford to, he sent it in and was promptly advised that he had been awarded the job. Not many days passed, however, until he called to mind that he had been given the contract in the first place, but it will be some time before his friends will cease to "josh" him over his ridiculous mistake.—Ex.

* * *

The Bachelor's Soliloquy

To wed, or not to wed;
That is the question.
Whether 'tis better
To remain single
And disappoint a few women—
For a time;
Or marry
And disappoint one woman—
For life.

—Judge.


UNITED STATES CVSTOM HOVSE AT SAN FRANCISCO
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New Custom House Building San Francisco

Eames & Young, Architects

The Old Custom House Building, San Francisco

United States Custom House Building, San Francisco

By WILLIAM A. NEWMAN, Architect

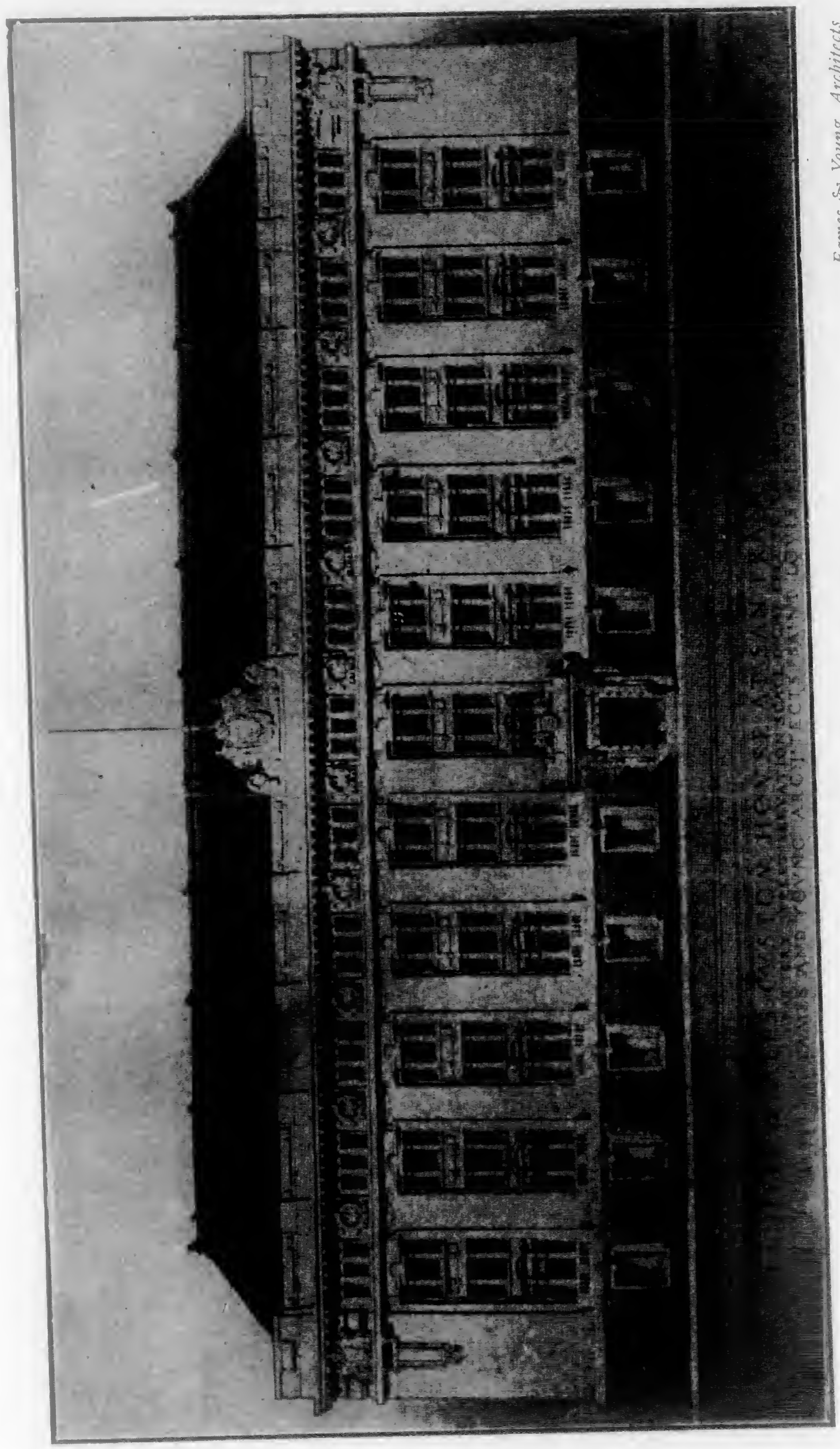
AMONG the many beautiful structures being erected in San Francisco, fast changing and forming the new skyline of the greater city of tomorrow, may be counted the United States Custom House building, occupying the entire western frontage on Battery street between Washington and Jackson streets.

The erection of the steel frame is now completed and the work of setting the granite facing will start immediately.

While it is a matter of pride to the citizens of this State that the Federal buildings, which have been designed and completed within the past few years, show that the supervising architect of the Treasury Department is keeping abreast of the spirit of the times and reflect much credit on his office, yet the new home of the customs service is only indirectly under the supervision of his office.

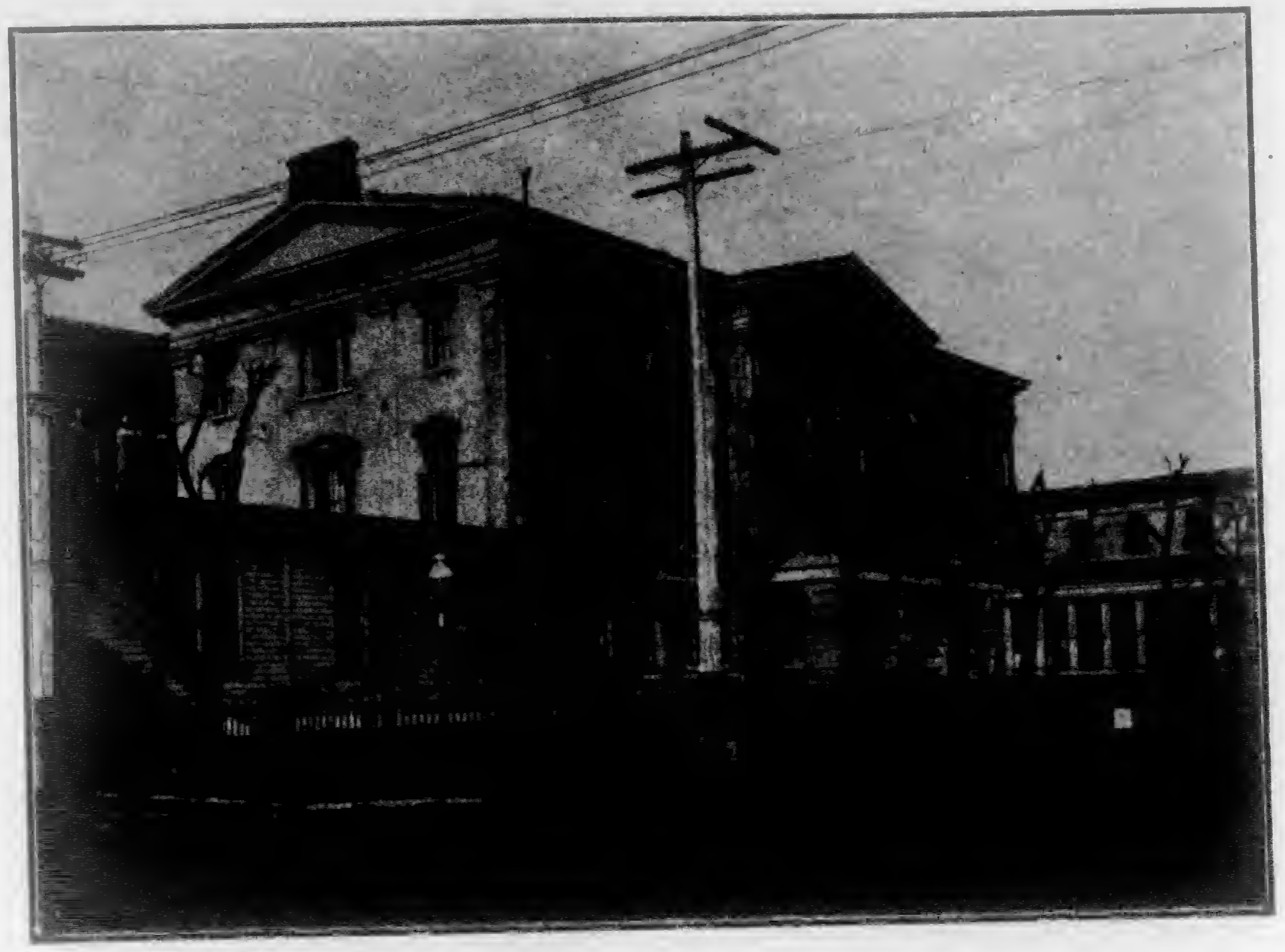
The successful architects in the competition are Messrs. Eames and Young, of St. Louis, Mo., who have produced an impressive and nicely balanced structure in the modern renaissance style of architecture, well adapted to the requirements of the various branches of the government service for which it is intended, and in distinct contrast to the old three-story building, with its classic facade, which it has supplanted. In size the building is 265 feet by 117 feet and contains five stories.

The superstructure is faced with California gray granite from quarries near Raymond, Madera county, excepting the rear court walls which are of white enamel brick. The building is fireproof throughout, with skeleton steel frame placed upon a concrete foundation supported on wooden piling.



New Custom House Building, San Francisco

Eames & Young, Architects



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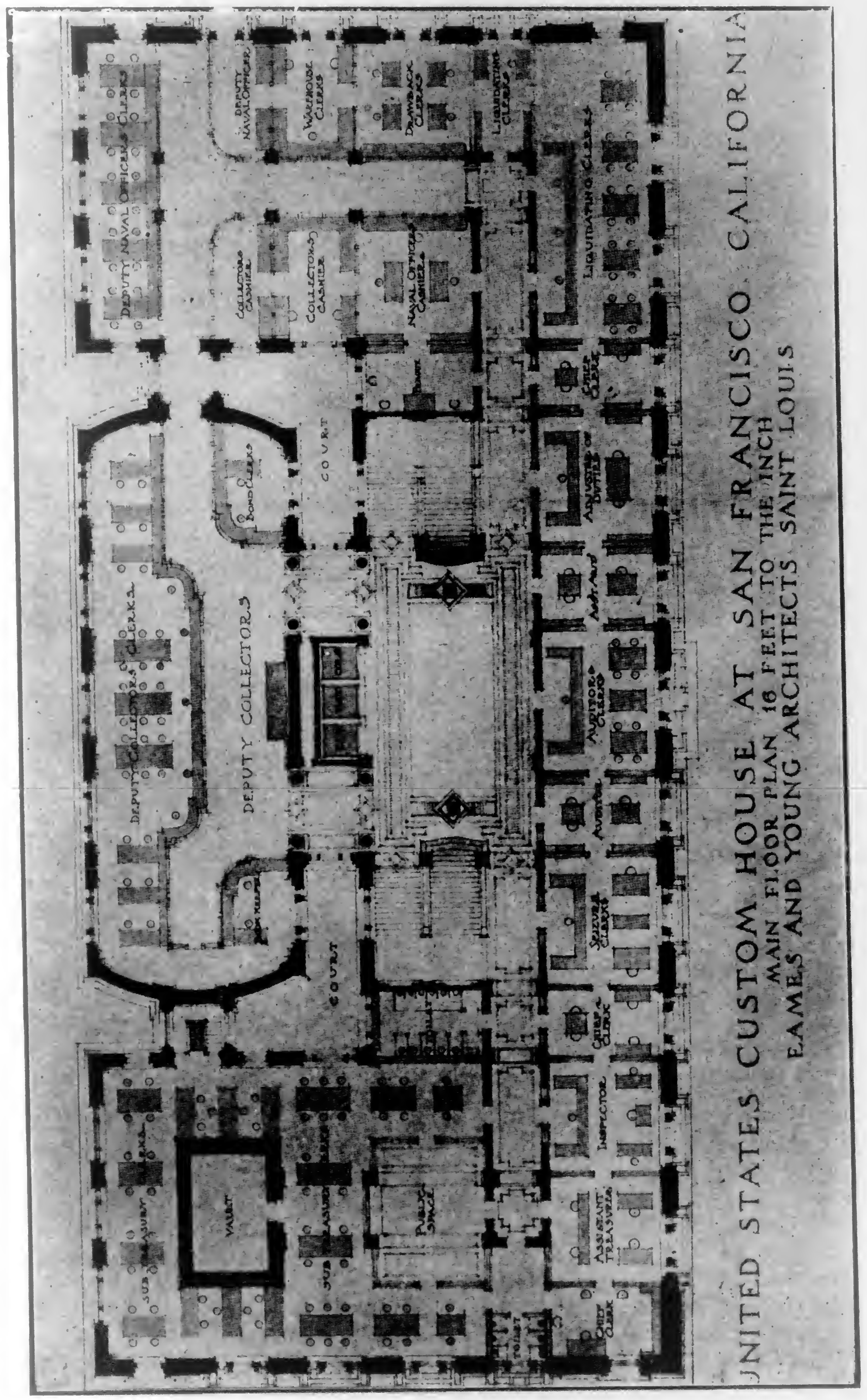
UNITED STATES CUSTOM HOUSE AT SAN FRANCISCO CALIFORNIA
MAIN FLOOR PLAN 16 FEET TO THE INCH
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DEPUTY NAVAL OFFICERS CLERKS
DEPUTY COLLECTORS
DEPUTY COLLECTORS CLERKS
COURT
COURT
VAULT
LIQUIDATING CLERKS

Main Floor Plan, New Custom House, San Francisco

Eames & Young, Architects

The corridor walls are to be lined with selected high grade white Italian marbles, and the floors of the same materials with Belgian black borders. All screen partitions, counters, desks and wood finish will be in white oak. Three elevators have been provided.

The mechanical plant will be located in the present Appraisers' warehouse adjacent, which will be connected, by a series of tunnels, with the new building and will operate all machinery and the heating systems for both buildings.

In addition to the customs officials, quarters are also provided for a branch Postoffice, Life-Saving service, Coast Survey and Revenue Cutter service, Internal Revenue office, Lighthouse engineer, Engineers of Harbor Fortifications, Chinese bureau, Weather bureau and Steamboat Inspection service.

The original intention of locating the Sub-Treasury in this building has been abandoned and quarters elsewhere will be provided for the Treasury officials.

The contractors, Thomas Butler & Son, expect to have the construction work completed within the next two years.

The Congressional appropriation for the new building is $1,500,000 which will be slightly under 62 cents per cubic foot.

By their long training and experience in the construction of Federal buildings, Superintendent Joseph W. Roberts, representing the United States Government, and J. F. Campbell, representing the architects, are fully qualified to guarantee that the Government's interest will be well cared for and the citizens of San Francisco will be proud to point to this addition to its monumental buildings as one of perfect construction and finish.

* * *

Papering the House

A decorator whose services are in great demand says that he seldom puts figured paper on a library wall.

"The library is for quiet reading and reflection," he says, "and anything that tends to distract the eye and thoughts is out of place. In the dining-room the dining table is the center of attraction and the room should set it off to the best advantage. Many persons like a bright red dining-room, yet there is no color harder to suit with table decorations. There are a host of colors that one cannot use with a bright red setting. In fact, green and white are the only possibilities. Dark red, brown or soft tapestry effects combine excellently with everything. A dining-room, too, in Colonial yellow and white is charming.

"When it comes to the hall a rich red wall with white enamel paint is a happy combination.

"The color of a room should depend very largely upon its exposure. For a sunless north room cold colors, such as blue and green, should never be employed. The sunny side of the house is the place for blues and greens and sombre effects."

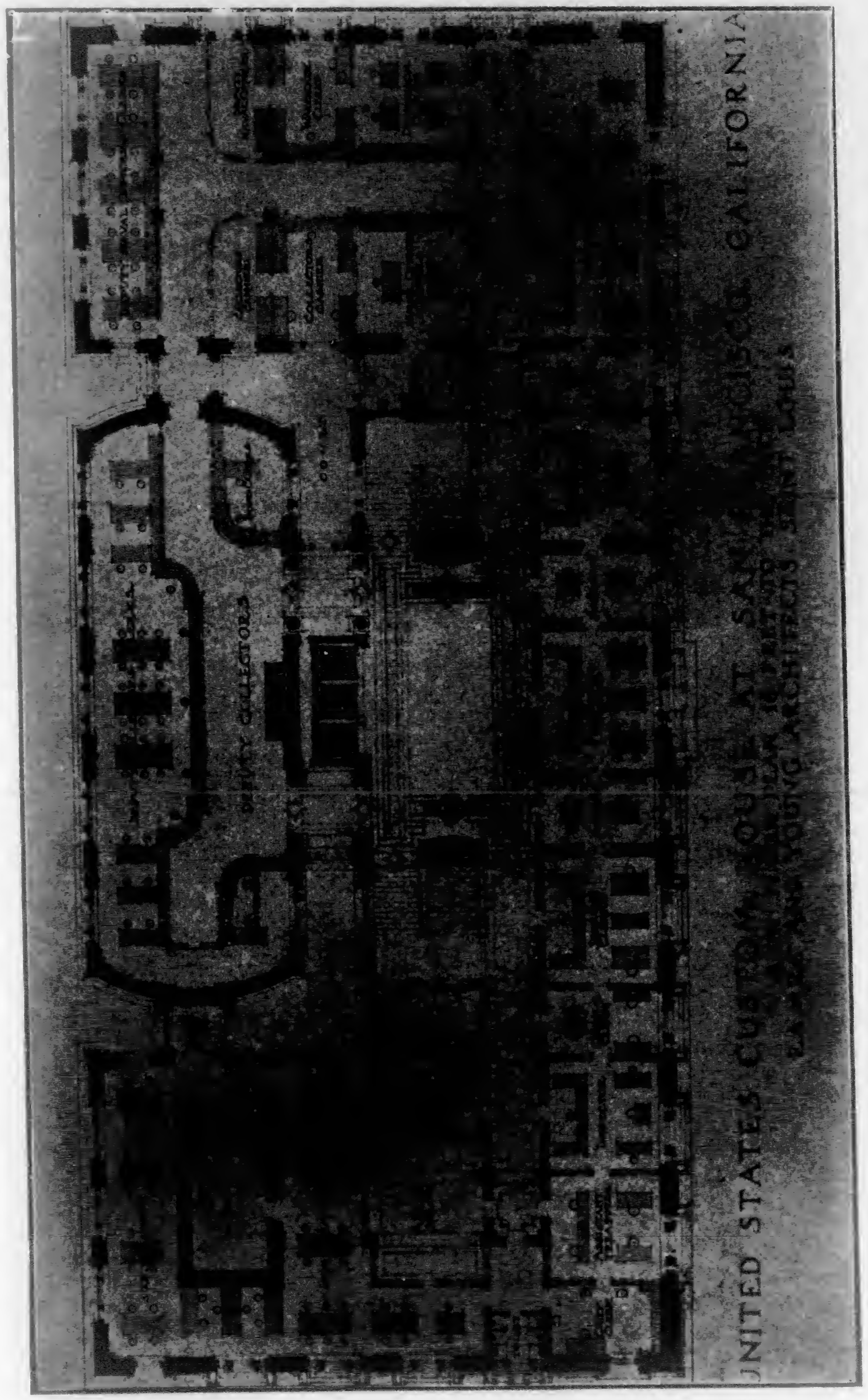
* * *

Got Results

Stockson.—One day last week old man Gotrox bought a lot of those "Do it now" signs and hung 'em around the office.

Bond.—How did the staff take it?

Stockson.—Almost unanimously. The cashier skipped with $30,000, the head bookkeeper eloped with the private secretary, three clerks asked for an increase of salary, and the office boy lit out to become a highwayman and got as far west as Pittsburg before he was caught and disarmed.—Judge.



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Supreme Court Hands Down Decision Bearing on the Mechanics' Lien Law

By T. C. KIERULFF

A MATTER of importance to the owners of property and contractors alike is the recent decision of the State Supreme Court in reference to the Mechanics' Lien Law. Two very interesting points were decided and a third one reaffirmed.

In all liens of sub-contractors upon which suit to foreclose has been prosecuted the courts have always allowed attorneys' fees to the lien claimants. It made no difference with what justice the owner of the property conducted the defense, if the lien claimant was but partially successful he was allowed attorney's fees which in some instances exceeded the amount of the lien. But always the owner of the property stood to lose.

The statutory provision in question is found in section 1195, Code of Civil Procedure, and is as follows: "The Court must allow as part of the costs, * * * reasonable attorneys' fees * * * to be allowed each claimant whose lien is established, whether he be plaintiff or defendant." No provision is made for attorneys' fees to the owner of the property if he is successful. He is not given the same protection under the law. He does not get equal protection. There never was any sensible reason why one class of creditors should be thus preferred over all others. Our Mechanics' Lien Law has been responsible for much injustice and provocative of more litigation than any other statute in our books. It has now been finally determined that such a law allowing attorneys' fees is violative of the Fourteenth Amendment to the Federal Constitution and is violative of the provision of our State Constitution.

A second point decided is this: A sub-contractor is not entitled to personal judgment against the owners, but is entitled only to enforce his claim against the land.

In nearly all contracts for the erection of a building there is a provision for damages to be paid to the owner for the non-completion of the building within the time specified in the contract; but until recently such a provision did not avail the owner in very many instances and perhaps never when liens were filed by sub-contractors, mechanics or material men. The owner was not allowed to offset the lien with any amount that might be due him from the contractor for any actual damage he might have sustained by reason of the non-completion of the building within a given time, and therefore all redress was denied.

It frequently happens that a building is constructed for some particular purpose and time is essential to the owner. Our laws provide—Section 1184, Code of Civil Procedure—that "As to all liens, except that of the contractor, the whole contract price shall not be diminished by any prior or subsequent indebtedness, offset or counterclaim, in favor of the reputed owner and against the contractor." Heretofore it has always been held that such damages as the owner might sustain for the non-completion of the building, provided for in the contract, came within the above provision of the law. It was finally decided by the State Supreme Court, in the case of Hampton vs. Christensen, and affirmed in the case of Builders' Supply Depot vs. Dennis O'Connor, that damages for failure of the contractor to finish the work within the time specified in the written contract may be deducted by the owner as against lien holders and that the clause above quoted, has reference in the first place to offsets not arising under the terms of the contract, and as to which, from an inspection of the contract, material men and laborers could have no notice.

Protection of Structural Steel

By O. M. BECKER

THE use of paper as a building material is not particularly new. It has been customary for a good many years to use a sheathing of tarred or otherwise prepared paper or felting in frame buildings to prevent dampness and cold working through the walls. It is now found that paper is, in combination with a suitable paint, the best material for preserving steel and steel structures exposed to the atmosphere.

Though in many respects one of the most desirable, and indeed necessary, building materials of the present, steel has the disadvantage of quickly corroding under the influence of ordinarily damp atmospheres, and its decay is particularly rapid when subject to air laden with smoke and other gases such as are common in manufacturing centers. The matter of protecting steel structures, especially in cities, is therefore a problem of great importance. If the steel framework of our great skyscrapers cannot be protected from atmospheric influence, the life of such a building is necessarily limited.

Up to the present time the effort has been chiefly toward covering the surface of steel structural parts with some lasting and gas resisting mineral paint, and where possible enclosing them within masonry. In spite of these precautions it is found that the rusting still goes on to some extent.

Concrete answers much better. In fact steel thoroughly imbedded in concrete does not rust at all; and a steel-concrete building, properly constructed, would last for thousands of years, growing stronger rather than weaker with increasing age. But it is not always convenient to cover steel parts with concrete, even where it is permissible to go to the expense of doing so. It can be readily seen, therefore, that the discovery of some relatively inexpensive method of covering and protecting steel structures is of considerable economic importance.

The mineral paints generally used are not sufficient for the purpose; for though they protect the metal beneath to a considerable extent, it is found after a time protruding points appear, which when punctured prove to be rust formations. Even in the case of the very best paints, applied in three or more coats, this action takes place within the space of a year or two under the most trying conditions.

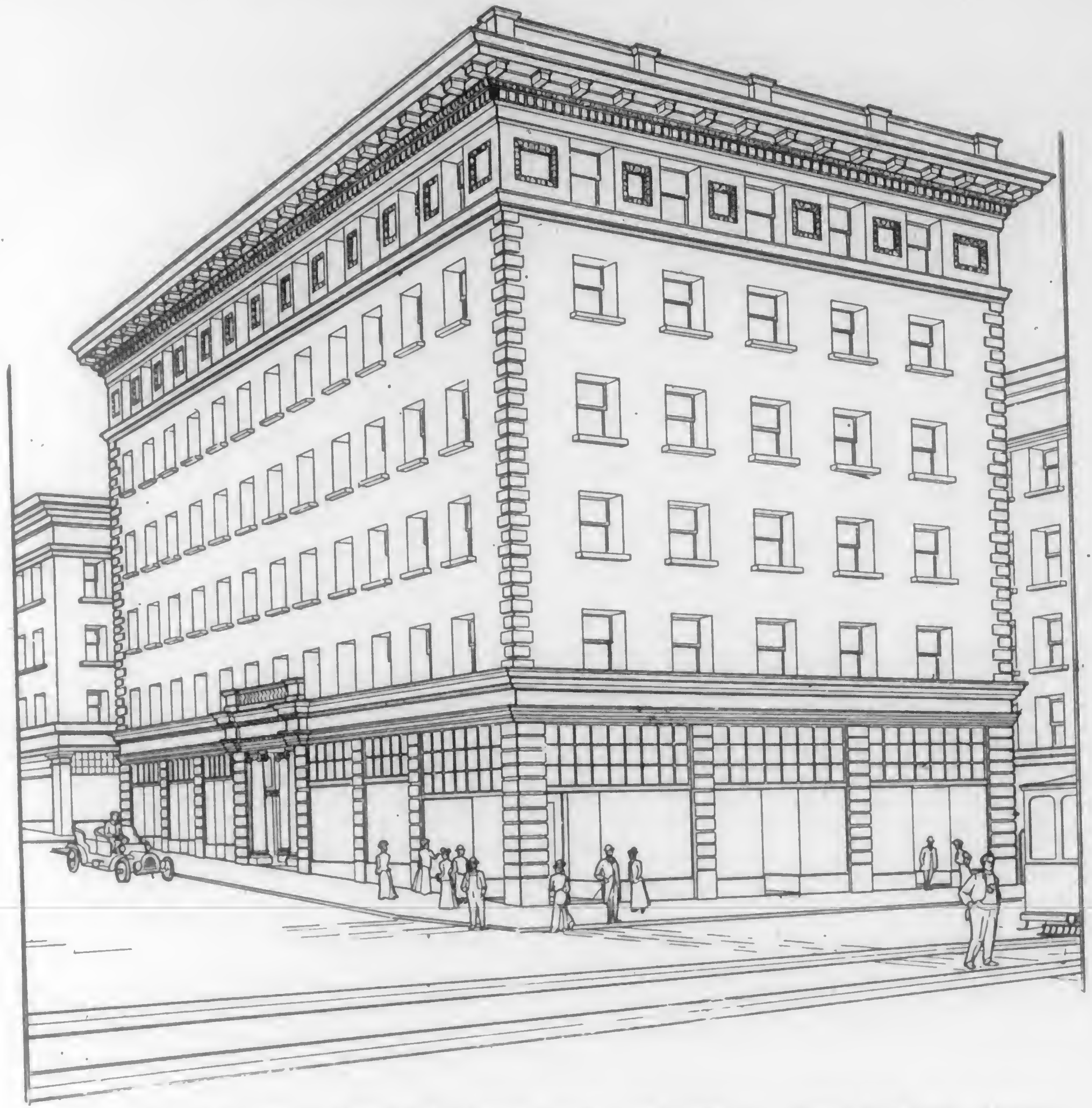
Evidently some moisture penetrates the paints and acts upon the steel beneath. The solution of the problem lies in some way tightly sealing the surface. And for this purpose it is found that nothing answers nearly so well as ordinary paraffine paper.

In application the steel is first thoroughly cleaned of rust by means of wire brushes, and then covered with a coat of some sticky paint. Upon this is pressed a layer of paraffine paper, the edges well lapped; and the whole covered with another coat or more of some good mineral paint.

Steel thus protected or wrapped remains in the same condition continuously; or at any rate during the three years since the method has been tried, no evidence of deterioration or corrosion has been detected, even where constantly exposed to the action of smoke and gases; and in most cases the inner coat was found, on examination, to be still green and sticky.—Ex.

* * *

Brick has proven its worth because it has shown its adaptability to every need in structural work. It is cheap, because any kind of brick can be bought to suit the buyer's pocketbook. It withstands the deteriorating influences of any climate. It makes a dry, warm building. It is easy to handle by the builder. Brick is made almost everywhere, and is therefore easily obtainable.



Hotel to be Built at Mason and O'Farrell Streets, San Francisco *Frank Van Trees, Architect*

Cement Shingles Cheaper than Wood

The use of cement for replacing articles made of wood is increasing every day. Cement has already replaced wood, to a great extent, in building sidewalks, bridges, fenceposts, steps, building walls, foundations and many other purposes and is commanding considerable attention at present in the form of shingles. In the earlier instances of concrete roofing the material was used in the same manner as in laying a floor, but the great strength required in a floor is not necessary in a roof. The cement shingles are only a little heavier than slate and not much more expensive than the best wood shingles, and, as they are practically indestructible, they are cheaper in the end than any other material, including tile and slate. These shingles are made in a great variety of designs and are reinforced with metal skeletons, which hold the cement together, and terminate in loops at the edges for nailing to the roof. They are practically everlasting, as moisture, the cause of universal decay, is the chemical agent in the process of hardening cement and when properly mixed and tempered the cement shingles become harder and more durable the more they are exposed to the weather.—Pop. Mechs. Exchange.

The Origination of the Steel Skeleton Idea

ANENT the statement that the late W. L. B. Jenney, architect, of Los Angeles, was the originator of the steel skeleton idea, the American Architect has this to say: "A few years ago, because of disputation over the matter, the American Institute of Architects examined the evidence accessible and decided that as between Messrs. Bradford L. Gilbert, L. S. Buffington and W. L. B. Jenney, all architects of standing, the latter had the better claim to be considered the originator of the modern method of steel-skeleton construction for high buildings. There is some reason for believing that the dismantling of the old shot-tower in 'the Swamp' district in New York City that is now going on may, as the structure was erected in 1856, prove that the method was in its essentials employed before Colonel Jenney built the Home Life Insurance Building in Chicago. But Colonel Jenney passed away in Los Angeles still in the belief that his claim to original authorship was undisturbed."

Commenting on the above, F. W. Fitzpatrick, architect, of Washington, D. C., writes as follows:

"To the Editors of the American Architect: Dear Sirs:—Your editorial in the issue of June 22d, anent the Gilbert-Buffington-Jenney claims as to which should be considered the originator of the modern steel skeleton construction was most interesting to me and brought up a flood of old though not particularly pleasant memories.

"The proceedings, evidence, etc., introduced before the American Institute of Architects must have been a sort of star-chamber affair, because this is the first I hear of it, and I generally manage to keep pretty well posted as to what is going on in architectural matters. Besides, what the mischief had the Institute to do in settling any such disputation that is so essentially purely legal in nature, and that is dreaded even by the highest and best equipped courts in the land?

"I know that Colonel Jenney's Home Life Building in Chicago was the first skeleton structure in the country. I did not even know that Mr. Gilbert had claims to antedating it, but it never seemed to me that the Buffington, or any of the other patents in that line of construction, amounted to a row of pins. The whole thing was rather the result of sometimes slow, sometimes rapid, evolution and the fertility of the American mind to grapple with existent conditions.

"The Buffiington patent always seemed more or less of a joke to me. In 1883 I was employed by him as a designer. Previous to that time I had had a lot to do with high church towers and had often thought over some scheme or other of doing away with the excessive weight and thickness of their supporting walls. The steel skeleton did not present itself to me then as a full-grown flower, but rather in the shape of a seed deposited in not unfertile soil. My idea was to reinforce the walls with iron beams placed vertically. Well, in 1883 Mr. Buffington had, as you may remember, the cream of the work of the West. The first thing I had to tackle was some trouble in the West Hotel, then under construction. One of the bay-windows had fallen down or something or other, and I 'flashed' my beam-reinforcement, but was pooh-poohed for my pains. But a little while later the Tribune building and several other big commercial structures were on the tapis. There the seed had taken root and was actually pushing up sprouts. I wanted to get the Tribune people into the notion of building a twelve-story structure and made the sketches showing cast-iron columns, bedded in a thin outer wall, with girders at each story, and the next story's thin outer wall carried on that line of girders, and so on up. This was termed 'crazy construction' by Buffington. But at the time there was rather a skillful engineer there (who also later invented the tubular tunnel that has been so much infringed in subsequent times) named Strom, who figured up this construction very carefully, proposed a substitution of wrought-iron members for the cast columns and declared that such a building could be carried up and safeguarded against wind, etc., easily to twenty or twenty-two stories. In 1886 I severed my connection with Mr. Buffington and was succeeded by probably the cleverest designer of his day, Harvey Ellis. Strom was still there. In due course of time there appeared in the American Architect, I believe, or in another technical publication, a splendid picture of a twenty-five story building 'designed' by Buffington. People generally looked upon it as a wild-eyed scheme, and even I felt a bit ticklish about the twenty-five stories, but gave it no particular thought, treating it merely as a 'project,' but knew nothing of its being patented. Some years later I was surprised to see that suits had been filed by Mr. Buffington against several owners and architects in Chicago for infringing his 'patent.' Nothing came of these suits.

"And that, in brief, is the history of at least the Minneapolis end of the steel skeleton construction's conception."

* * *

Decisions of Interest to Architects and Builders

DAMAGES *Against Contractor for Abandonment of Contract Without Cause.*—A contractor for the construction of a dam and power plant at Spier Falls, on the Hudson River, abandoned the work before its completion without cause. The owner went ahead with the work and finished it, but in doing so incurred a much greater expense than that provided for in the contract. It was held that, in such a case, the owner is entitled to recover damages from the contractor, the measure of damages being the difference between what he would have had to pay the contractor, if the latter had completed the work, and the actual cost of finishing the work, providing the same was reasonable, and there was no clause in the contract fixing the amount of damages in case of abandonment. National Contract Co. vs. Hudson River Water Power Co., New York Supreme Court, Appellate Division, 103 N. Y. Supp. 640.

Liability to Laborer Injured While Putting Up Iron Work.—A laborer was directed by his foreman to assist in putting up the iron work of a building, and while one of the beams which had been wrongly placed was being reversed the laborer was injured in some unexplained manner. Up to the time when he was called upon to help in this part of the construction, the plaintiff had not helped to set any of the beams, and testified that he was ignorant, not only of the process, but also of the use of the appliances used in the work. It was held that it was the duty of the defendant, the plaintiff laborer's employer, to warn the latter of the possible danger that might arise while engaged in the work he was set to perform. It was also held that the defendant was liable under the statutes of Massachusetts, making an employer responsible in damages for an injury to an employe through the negligence of a person exercising superintendence. Reardon vs. Byrne, Supreme Judicial Court of Massachusetts, 80 N. E. Rep. 827.

Right to Recover for Extra Work on Building Contract.—A building contract provided that no extra work would be paid for unless ordered by the owner or his agent in writing, and unless the prices were agreed upon between the owner, or his agent, and the contractor. The contractor brought suit to recover compensation for work which he admitted was not covered by the original specifications and for which he had no written authorization, it was held that the owner, having ordered the work done, and received the benefit thereof, would not be allowed to hide behind the provision in the specifications, which had been disregarded by him as well as by the contractor, and the contractor was permitted to recover. Clark vs. Harris, New York Supreme Court, Appellate Term, 103 N. Y. Supp. 785.

Architect Not Entitled to Recover for Services in Preparing Defective Plans.—In an action by an architect to recover $500, balance due for plans for a store and loft building which he had drawn, the defense interposed was that the plans were defective and utterly unfit for use. The character of the services for which suit was brought is shown in the following language of the Court: "No dimensions were noted on them (the plans), and the figures and scales did not correspond, and they were full of omissions and inaccuracies. The plaintiff himself admitted that his plans were incomplete, and it appears from the testimony of an expert witness called by the defendant that such plans could not be used by a builder. The plaintiff further admitted that this was his first large job; that he had previously drawn plans for alterations only, and had never drawn plans from which a building was constructed." It was held that the owner was under no legal obligation to pay for the work. The undertaking of an architect implies that he possess skill and ability, including taste, sufficient to enable him to perform the required services at least ordinarily and reasonably well. It was also held that the fact that the owner had paid $100 on account to the architect did not constitute an acceptance of the plans, or a waiver of their defects, where the payment was made without knowledge of their shortcomings, so as to render the owner liable for the balance or any part thereof. Dunne vs. Robinson, New York Supreme Court, Appellate Term, 103 New York Supp. 879.

* * *

A Stonewall Jackson Story

"Stonewall Jackson," said a Virginia veteran, "used to tell a good story about a bridge builder.

"This bridge builder was called old Miles. He was very necessary to Jackson because the flimsy bridges on the line of march were continually being swept away by the floods or destroyed by the enemy, and in these contingencies Miles was a regular jewel. He could run you up a bridge in the time it would take another man to make the measurements.

"One day the Union troops burnt a bridge across the Shenandoah. Stonewall Jackson called old Miles to him and said:

" 'You must put all your men to work, Miles, and you must keep them at it all night, for I've got to have a bridge across this stream by morning. My engineer—an invaluable fellow, by the way—will draw up the plans for you.'

"Well, early the next morning, Jackson, very much worried, met old Miles.

" 'See here,' he said, dubiously, 'how about that bridge? Did the engineer give you the plan?'

"Old Miles took the cigar from his mouth and flicked the ash off with a sneer.

" 'General,' he said, 'the bridge is done. I dunno whether the picter is or not.' "

* * *

Working Overtime

A Chicago teacher gave a boy pupil a question in compound proportion for home work one evening, which problem happened to include the circumstances of "men working ten hours a day to complete a certain job."

The next morning the unsuspecting teacher, in looking over his pack of exercises, found one pupil's problem unattempted, and the following note attached to the page:

"Deer Sir, I refoose to let my sun James do his sum you give him last night as it looks to me like a slur on the 8-hour sistem, enny sum not more than 8 hours he is welcum to do but not more. Yrs trooly, Samuel Blocksky."—Success Magazine.

Bungalow at San Mateo Designed by Mrs. Russell C. Smoot

Looking into the Sun Parlor. Bungalow of Mrs. Russell C. Smoot, San Mateo

A California Bungalow Designed by a California Woman

CALIFORNIA has many unique bungalows designed by skilled architects, but we know of only one such building designed by a woman who does not claim to possess architectural talent. Mrs. Russell C. Smoot has built beneath a wealth of foliage at San Mateo a bungalow of modest proportions that is so different from the average house of this type that it deserves more than passing mention. To begin with, it has no plaster whatever in its construction. The outside finish is of redwood shakes while the window and door jambs are redwood saplings with the bark peeled off but knots left. The pergola, also made of saplings, is covered with climbing roses.

The bungalow is severely plain and simple. The living room has a rough beam ceiling. The sides are paneled to a height of six and a half feet and covered with dark green burlap. The mantel is also made of heavy beams, a large Mission clock being built in the center, with gable effect to the ceiling. Back of the living room is a small sun parlor or flower room, having glass on two sides. The walls of the dining room are paneled to a height of six feet. The china closet is built after the old Mission style and the blue china-ware matches exquisitely the old Dutch blue furnishings of the dining room.

The woodwork throughout the house is perfectly plain and all the picture frames are made to match. The bedroom ceilings are panel work and the rough walls are covered with figured cretonne. The bathroom fixtures are of plain white enamel. The pantry and kitchen are planned to give every possible

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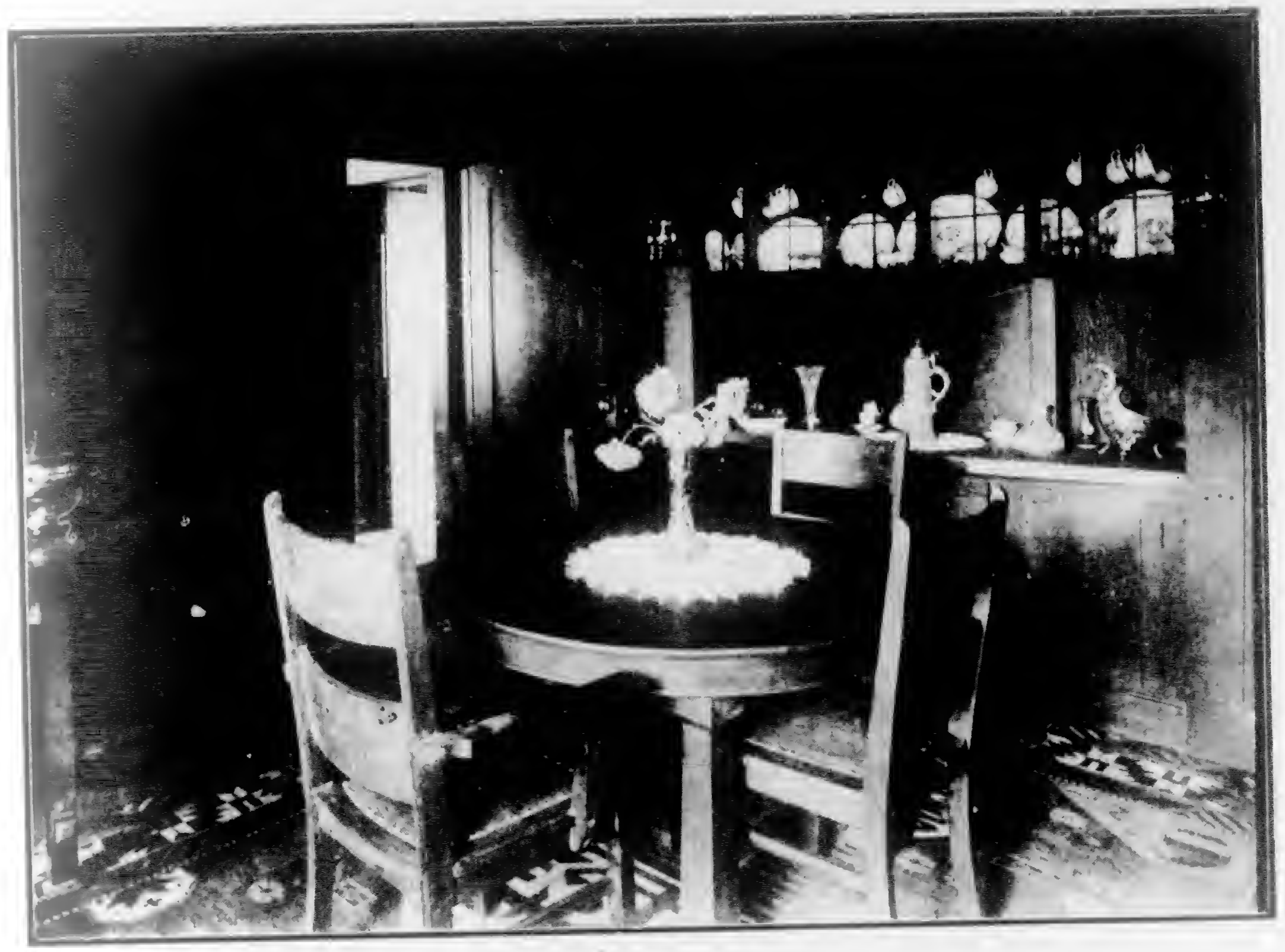
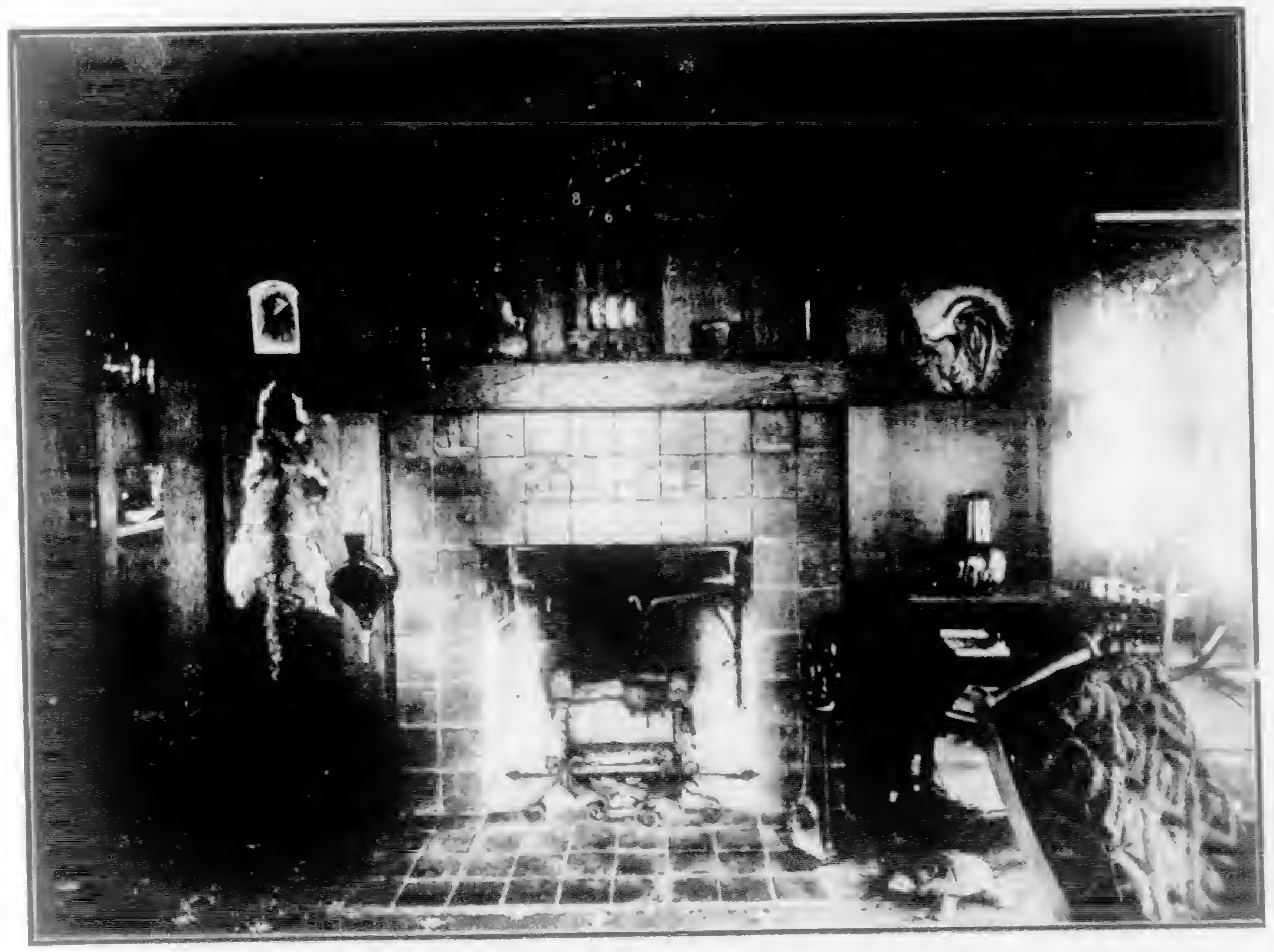
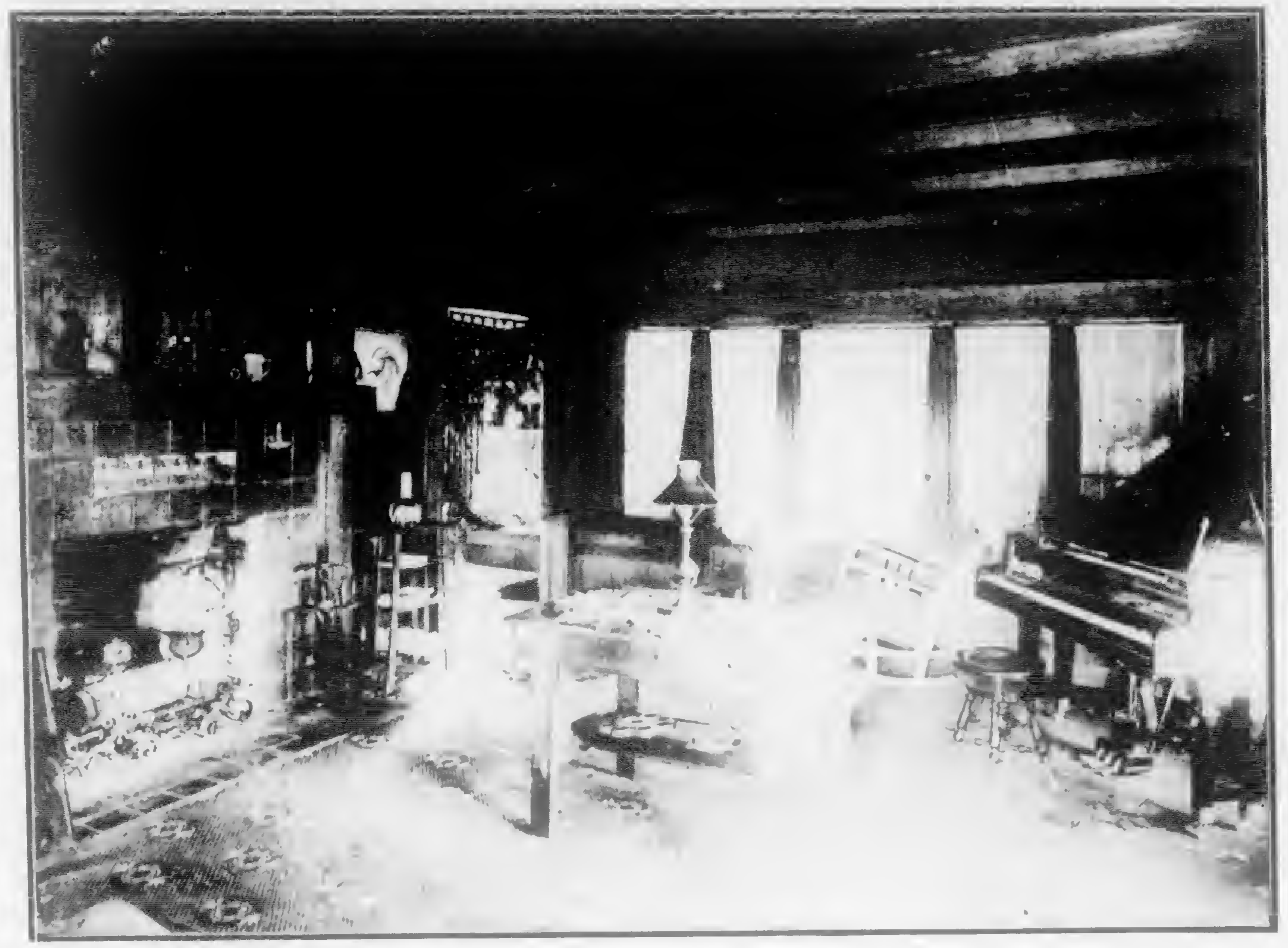


Dining Room in Bungalow of Mrs. Russell C. Smoot, San Mateo



Mantel and Fireplace in the Smoot Bungalow, San Mateo



Living Room in Bungalow of Mrs. Russell C. Smoot San Mateo

comfort and convenience. A gas range is situated in front of a large sliding window which is opened at meal time just enough to let out the odor of cooking. In the cellar is an instantaneous heater, having a circulating line to all fixtures.

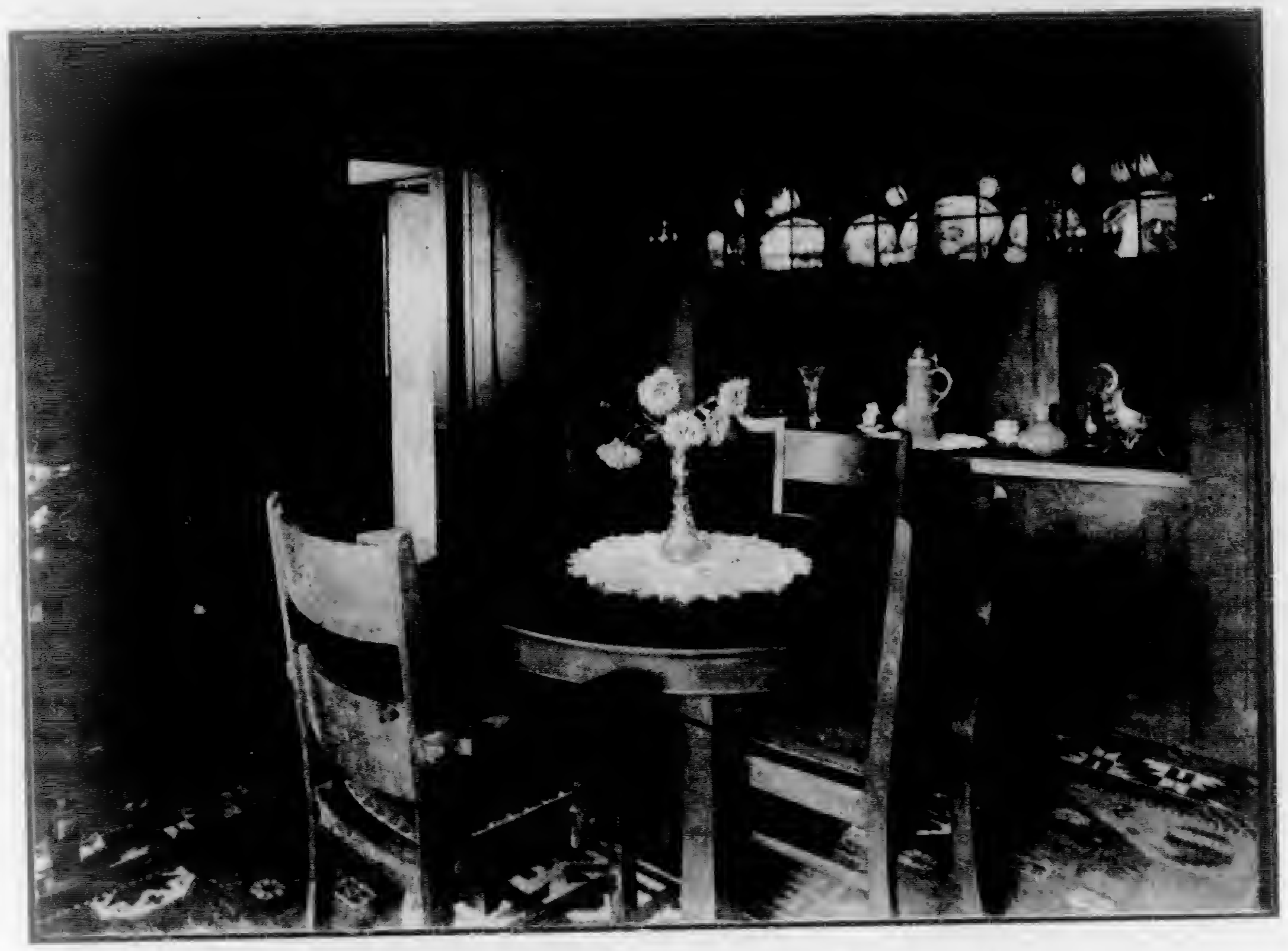
Speaking of her home Mrs. Smoot said: "I made up my mind to build something different from the general run of bungalows and so followed out my own ideas entirely. I designed practically everything in the house. I was, of course, on the job constantly from eight o'clock in the morning till five o'clock at night and fortunately had a good mechanic as foreman who caught my ideas quickly and seemed to like being bossed by a woman. The shakes and saplings I had hauled from the redwood camps in the mountains. Our place is terraced and directly opposite the famous Haywood mansion which is being remodelled into a tourist hotel."

* * *

Mark Twain on Advertising

Mark Twain says: "When I was editing the Virginia City Enterprise, writing copy one day and mining the next, a superstitious subscriber once wrote and said he had found a spider in his paper. Was this good or bad luck? I replied to him in our 'Answers to Correspondents' column as follows:

"Old Subscriber—The finding of a spider in your copy of the Enterprise was neither good luck nor bad. The spider was merely looking over our pages to find out what merchant was not advertising, so that it could spin its web across his door, and lead a free and undisturbed existence forever after."



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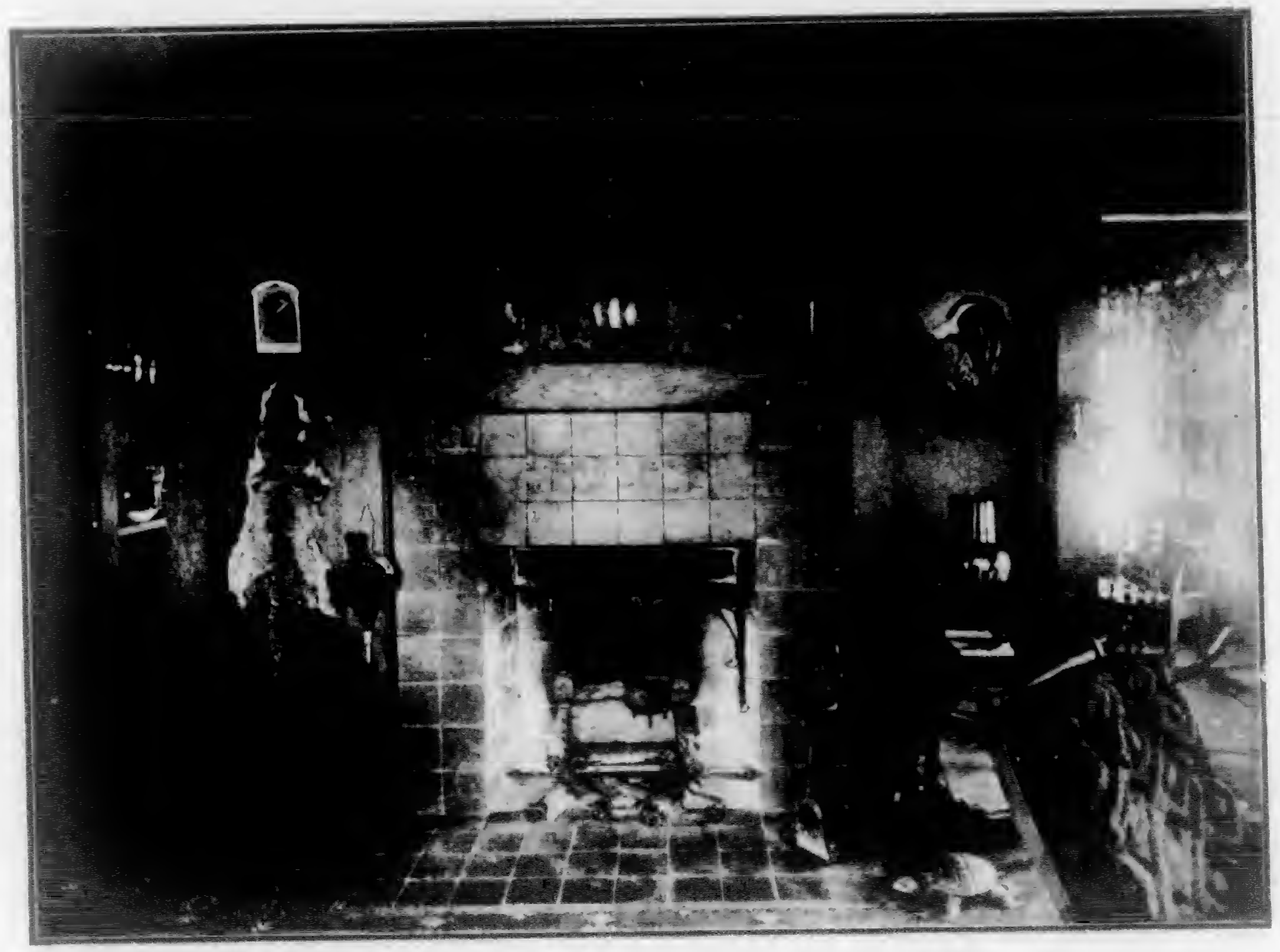

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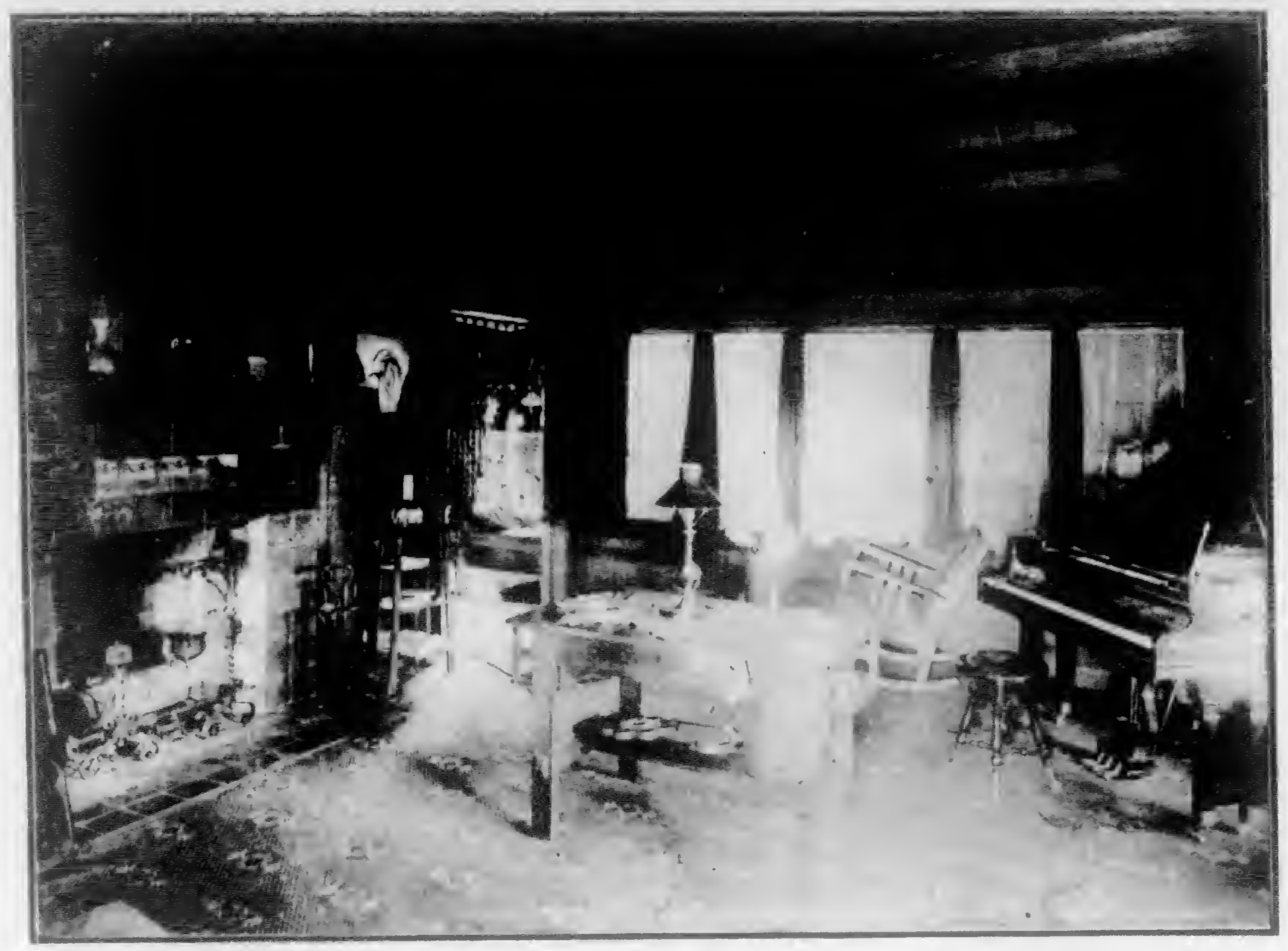

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Some Engineering Lessons of the San Francisco Disaster*

By J. L. VAN ARNUM, C. E.

THE modern city is the creation of commercial needs, and its location is fixed by commercial conditions. The duty of the structural engineer is to so plan all parts of the structure that it shall resist (1) with certainty all definite calls upon it; (2) with no serious injury all probable calls upon it; (3) and without destruction all those occasional visitations that human power can resist. Grouped under the first heading are the live-load, dead-load and the ordinary wind-load requirements, etc.; under the second heading would be grouped such occasional attacks as those of fire, gales and moderate earthquakes in earthquake regions; under the third head occur such disasters as hurricanes and tornadoes, general conflagrations and severe earthquakes, such as at times appall humanity in disasters that are made possible by reason of inadequate design or construction (or both), permitted in order to save a small percentage of expense, but thereby hazarding the integrity of all, with the gambler's chance of some gain or great loss.

Successful resistance to earthquakes, even when severe, is possible; but as this concerns most cities only remotely, it will be passed over with the statement that unified foundations structurally carried to solid material, with a thorough swaybracing frame, will preserve the integrity of a steel building in any probable earthquake; even in masonry walls, bands of metal reduce to small proportions the damage to them from seismic disturbances. It is mainly with the fire lessons that we are concerned, because they are of universal interest and application. It is true that, often when discussing these lessons, we hear the remark that the Baltimore and other fires teach the same facts; but if we analyze more deeply, we must conclude that the San Francisco lessons are unique in giving us generally the effects of fire only, while nearly all others have left the added destructive action of water and steam upon the highly-heated fire-resisting materials.

The main study, then, will be that of different engineering materials with regard to their earthquake-resisting and fire-resisting properties. In view of the general conditions found to exist in San Francisco, as developed by his careful inspection of the city, the writer would impress with all the earnestness at his command the absolute necessity that good construction must follow a good design, or the result is a failure. Faulty design may be partly or wholly redeemed by excellent construction, but a thoroughly good design may easily be utterly ruined by defective construction. These facts are not at all new, but they are so evidently often obscured or ignored that it would be well if they might be impressed with all the vividness of a new thing. The engineer should always see to it that his design is constructed of adequately good materials and executed with the necessary skill and character of workmanship.

Passing the discussion of foundations (not because they are less important than any, but because the superstructure is most exposed to the destructive agencies under discussion), it may be said that wood resists earthquake vibrations well, if the frame and roof are properly tied and braced; the almost universal practice is to ignore such bracing, and then the result is a collapse. In fire, wood, of course, "adds fuel to the flames."

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* A paper read before the Engineers' Club of St Louis.

Masonry walls of all kinds resist earthquake usually without destruction if well built, generally with considerable damage; the effectiveness of resistance is enormously increased with but little extra expense by improving the weak part of the wall—the mortar—by putting into the mortar a large proportion of Portland cement*; and a further effectiveness of resistance may be secured by metal ties and bands. Against fire, even without the rupturing and exploding action of water from the fire streams striking highly-heated materials, stone of practically all varieties spalled and disintegrated badly and in varying degrees, enough to require its replacing for the sake of appearance even when it was not structurally incapacitated.

In buildings in which steel enters as an essential structural element, more attention must be given to lateral bracing and to connections to make the structure safely resistant to earthquake vibrations. A more definite lateral stability must be furnished, with less reliance upon the indefinite internal rigidity of the finished structure.

In fire, the particularly vulnerable point of buildings of the first class remains the inadequate protection usually made against the introduction of fire from the outside, through windows, doors and inadequately designed roofs which quickly burned away. The protecting effect of metal shutters and metal covering of window trim was great, increasingly so as its character was better, and often so decisively effective as to permit the saving of the building at critical times, as the Kohl building. Even without such protection the decided advantage of wire-glass was shown in a number of cases, as that of the Western Electric Company's building. Although the heat shatters the glass, the wire holds the pieces in place in most instances, so that the flame cannot enter; and although it has the defect of diathermancy, even a weak defense inside may overcome the danger arising from the transmitted heat. It has become evident that, in general conflagrations, fireproof buildings are the innocent victims of outside attack rather than the cause. The conclusion is then inevitable that a very great need in improving conditions is adequate protection of exterior openings.

Passing without comment some of the lessons driven home by resulting failures, such as the necessity of adequate and correct connections, thoroughly good riveting, good bond between facing and backing, properly constructed partitions, etc., the general fact is noted that terra cotta offers much less effective resistance to fire than does reinforced concrete. I can tarry on this lesson only long enough to state that this reference is, of course, only to good materials, well fabricated; and in this connection it should also be stated that critical examinations have indicated grave danger of the gradual scattering corrosion of metal embedded in cinder concrete.

There probably is no more important or instructive lesson to be drawn from this disaster than the imperative necessity of adequate protection of essential metal, whether this metal be a steel frame or steel reinforcement of concrete construction; and a considerable advance has been made in determining with much greater definiteness the details of such requirements. San Francisco's revised building laws, as approved on July 5, 1906, permit of the use of brick, metal-lath and plaster, terra cotta and concrete. Brick of proper quality furnishes good protection if the minimum covering of the most exposed metal is at least four inches, and the mortar is of Portland cement. Metal-lath and plaster may, with care, be made efficient, but the wisdom of its permissive use seems to the writer to be doubtful, because of the requirements for efficient resistance are so easily slighted; the fact remains that a noticeable proportion of failures in San Francisco were due to a sham application of this kind of protection.

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* The Appraisers' building, which survived without a crack, was built with brick laid in cement mortar, and is said to have had a monolithic concrete foundation six feet thick capping the foundation walls.

When terra cotta is used, the minimum protection should be at least two inches for beams and girders and four inches for columns, with especial attention given to proper mortar and to metal ties. It must also be remembered that, where the heat is great, the outer web of terra cotta blocks shears off and fails, due to the excessive differential expansion of this outside web even when water from fire streams does not add its rupturing effects by cooling suddenly the highly heated surfaces; this usually means the preservation of the integrity of the steel frame, but does necessitate an entire reconstruction and replacement of the ruptured terra cotta.

Concrete or reinforced concrete of good quality both protected the structural metal and usually avoided the necessity of reconstruction (because the injury to it was superficial, not radical), except when the thickness of this protection was insufficient. In cases where the embedded, protected steel reached within an inch or so of the surface, the fire conditions often ruptured off the thin protecting layer of concrete, leaving the steel exposed. This is especially liable to occur on the under side floor-beams and girders, where the embedded rods are so near the surface that the highly heated covering differentially expands considerably as compared with the concrete above the steel, leaving an easily ruptured section in the plane of the reinforcement where the bars are so numerous as to greatly reduce the area between them of the concrete connecting this outer protecting layer with the mass of concrete above the reinforcing steel.

It is believed that three or four inches of covering for the metal is as necessary for reinforced concrete construction as for column coverings of brick or terra cotta in order to give columns adequate fire-protection. Tending to confirm this opinion is the fact that as a general proposition, in a temperature of 1200 to 1500 degrees Fahr., heat will penetrate concrete to a depth of two inches, enough to raise its temperature to 500 degrees Fahr. in less than an hour, while it takes perhaps three hours for this temperature to penetrate four inches; this is significant because noticeable loss in strength occurs at about this temperature, which increases rapidly for higher temperatures. For evident reasons the regulation of the item just mentioned must be covered by the building laws of cities in order that it may be made effective, as in the case of so many general requirements necessary for the public safety and welfare.

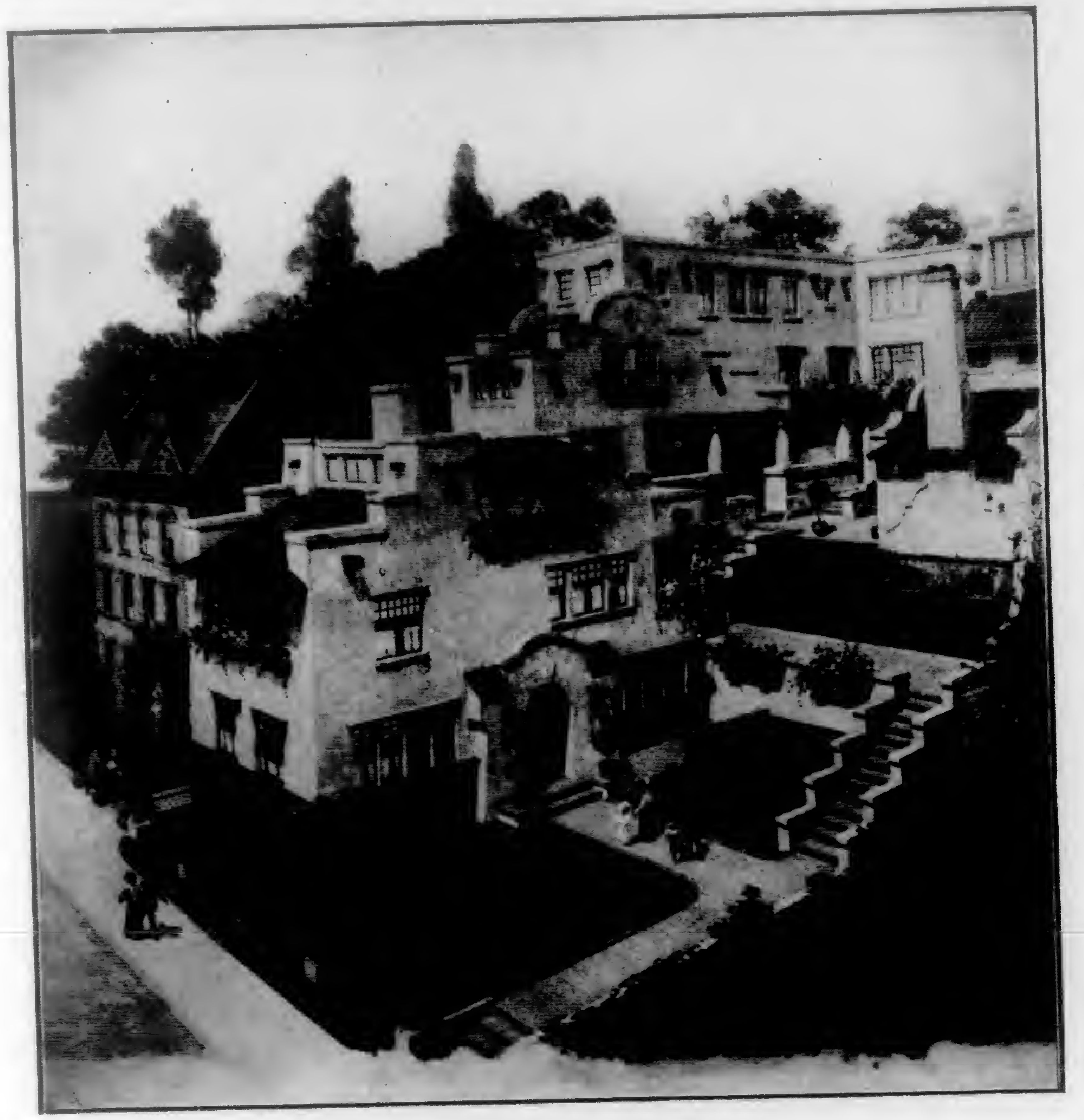
Hitherto it has been considered that a point of especial vulnerability is the lower flanges of beams and girders. While this fact essentially remains true, it seems that, relatively, more attention must be given to the adequate protection of columns, inasmuch as the failure of one of the lower columns involves not only theloss of it, but also the letting down or destruction of everything above it. The most prevailing cause of destruction and loss is in the San Francisco fire, caused by a single class of weakness developing, was due to the partial or complete failure of basement or lower-story columns exposed to the fire by the destruction of their fireproofing.

I would add, in closing, one reference that concerns engineering in its commercial and business relations. The adequate protection of essential members from fire will add a small per cent to the cost of a building over its cost if partially protected. This amounts to a few thousand dollars, which looks large to the firm paying for the structure; consequently, as a rule, the firm will take the risk of destruction for the sake of saving this extra initial expense. Were the small additional expense of thorough fireproofing assumed, it would not only decrease the hazard to the owner, but would make the structure a safer risk to insurance companies. Unfortunately, fire-insurance companies will not make public such statistics as they have, giving relative losses on different types of buildings. Yet it is believed that their relative losses on buildings of the first class are much less, proportionally, than is indicated by the somewhat lower insurance rate now prevailing for such buildings. In other words, the reduced hazard secured by thorough fireproofing and fire-protection ought to secure to the owner an insurance rate so noticeably lower that this saving would go far toward compensating him for the extra expense in securing this increased safety. This reduction in rates might well be made still greater when fireproofed buildings are compactly grouped, thus mutually protecting one another. Engineers, architects, insurance men and men of business would probably find that united consideration of this subject would lead to a mutually beneficial adjustment of these interests on the lines indicated.

* * *

Folly of Taking a Dare

FATHERS, forgetting that they themselves have been boys, often try to persuade their sons that nothing is more foolish and less manly than undertaking to do an absurd thing because they have been "dared" to attempt it. It looks very much as if architects, like boys, found it impossible to "take a dare" and interpreted the erection of each new skyscraper as a direct challenge to build one that would be more altitudinous. The latest architects to resent the imputation on the actual color of their livers and the plumage they affect are two who operate in Pittsburg, and it is said to be their present hope to be able to manifest their skill and courage by erecting a building seven hundred feet high, though we conceive that they will signalize rather the vulgarity of their artistic perceptions and the undeveloped condition of their imaginative faculties. To do a thing simply because it can be done is an extremely poor reason for doing it: if it were a good and valid reason, then it would be proper to begin at once to cut a ship-canal from Sandy Hook to the Golden Gate, or to extend the proposed skyscraper to a height of seven thousand feet instead of stopping at the lowly seven-hundred-foot level. A condition that makes the alleged enterprise especially obnoxious is the fact that the site selected for this new manifestation of the surrender of the art of architecture to the science of engineering is now occupied by Richardson's Allegheny County Court-house, against whose suggested alteration, even, most of the architects in Pittsburg and a very large number of those practising elsewhere protested vehemently, as being a "desecration," two or three years ago, and it is quite possible that the names of the architects of the proposed skyscraper might be discerned in the list of the said protesting architects.—American Architect.

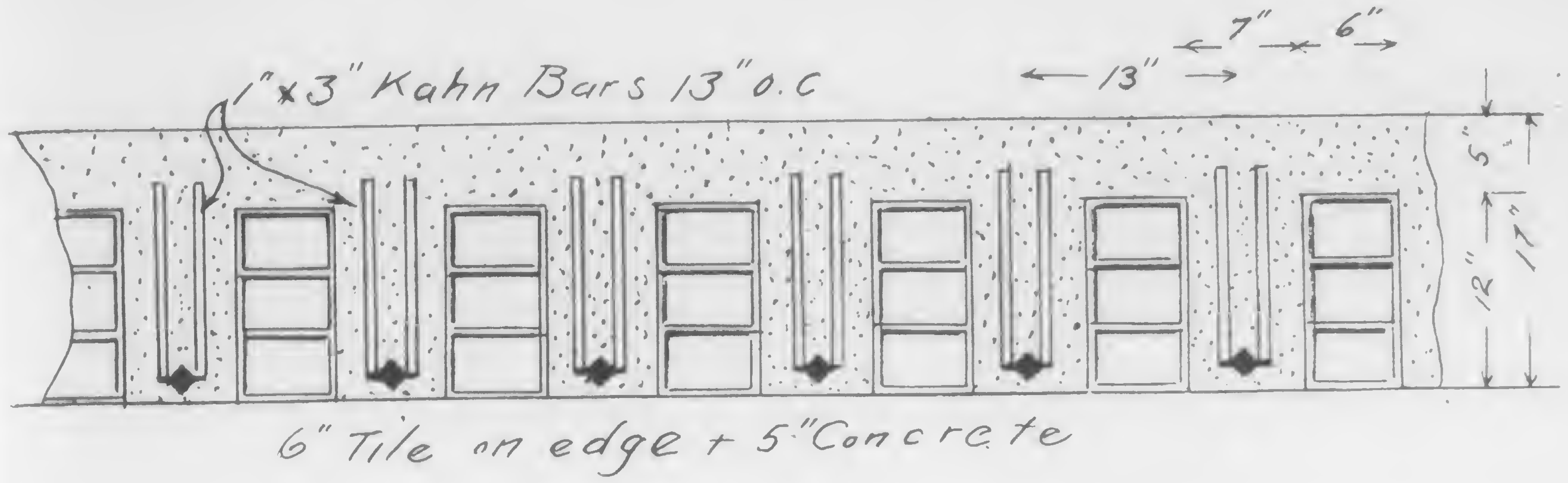


Apartment Flats for L. T. Smith, San Francisco
Stone & Smith, Architects

Unique Apartment Flats

THE above illustration shows five unique apartment flats being erected for L. T. Smith upon a sloping lot on Sacramento street, San Francisco. The buildings are of the mission type modified to suit modern ideas of convenience.

The grounds are laid out in terraces, the first or street terrace being in lawn and surrounded by palms, etc. The second is a formal garden, semi-enclosed, the walks and gardens being paved in large fire tile of a warm brownish red, with bay trees and a circular center garden of red geraniums. Each apartment is supplied with an abundance of flower boxes, balconies, etc. The exterior walls are to be finished in Klinker brick and cement, with solid redwood beams and cornices left natural. Bright red tiles form the roof, making a very happy color combination.



Notable Reinforced Concrete Test

UNDER the direction of Architect Theo. A. Eisen and Contractor E. F. Low, a notable reinforced concrete floor test was made July 23 at the Boston Store annex, now in course of construction at 240 South Hill street, Los Angeles. The test was made on a twenty-five-foot clear span on the first floor, without any intermediate beams to assist it in supporting the strain. On a space twenty-five by nine feet was placed a load of 213,750 pounds, or more than 106 tons, under which the deflection was only an eighth of an inch. The pressure was equal to 950 pounds to the square foot.

This is said to have been one of the most severe tests to which a reinforced concrete floor ever was subjected. The specifications call for a floor capable of sustaining a weight of only 300 pounds to the square foot, or less than one-third the amount placed on it. The city inspector's requirements are that a floor of this kind shall not deflect more than half an inch while supporting a load of 500 pounds to the square foot.

Anent the test, Heber & Thayer, who represent the Kahn trussed bar, used for reinforcing the span, write as follows:

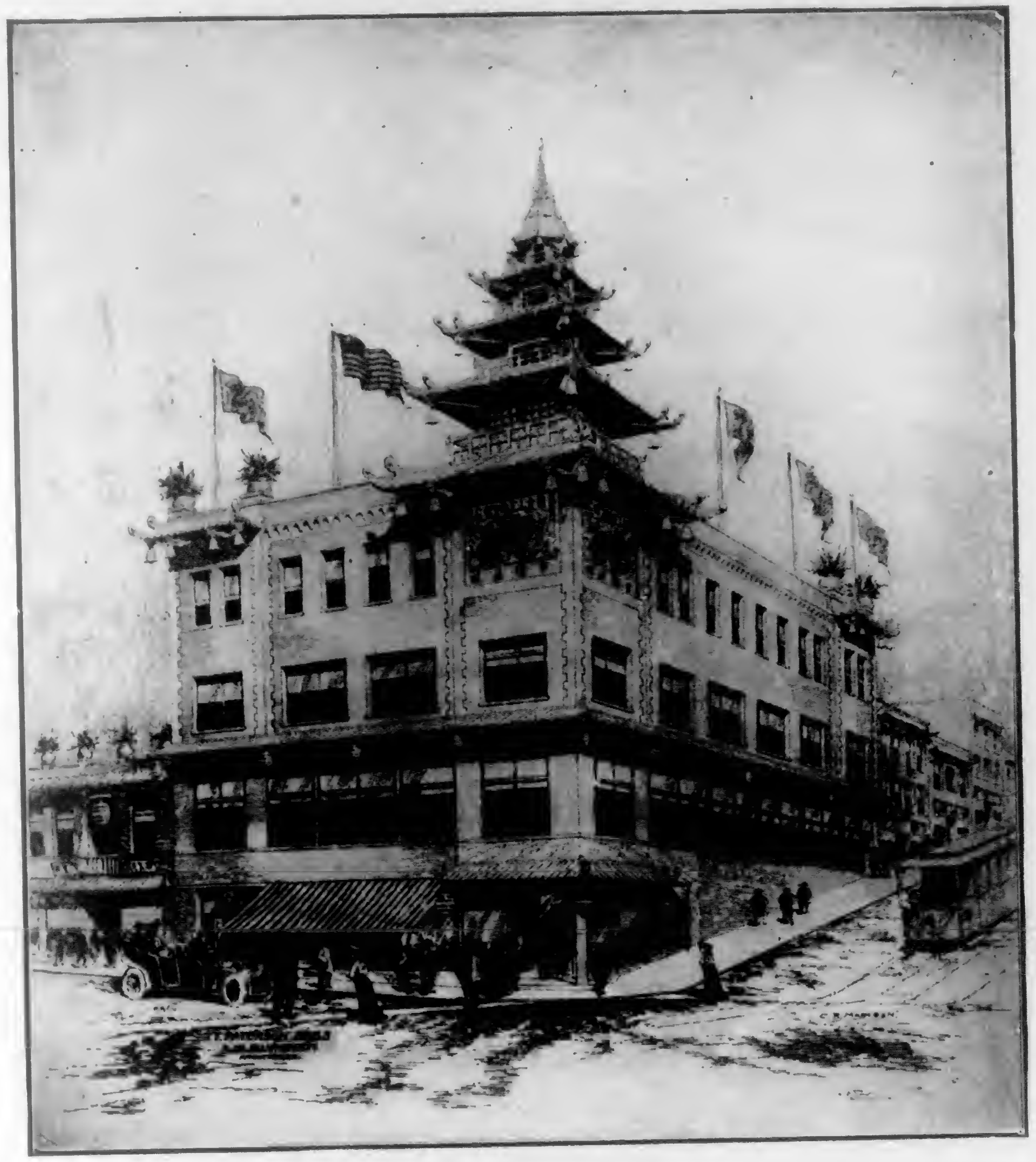
"The span tested was twenty-five feet long and nine feet wide. This nine feet was taken directly in the middle of the span between the columns; the reason for making the span only nine feet wide being to economize in the amount of material used. The material used was brick, so piled that there would be little or no arch action. The bricks were piled to a height of a little over nine feet, making a total load of 213,750 pounds, or 950 pounds to the square foot. The deflection in the center of the panel after the load was placed, was only one-eighth of an inch. This load has now been upon the floor for three days and the deflection at this writing is only slightly in excess of one-eighth of an inch.

"The City Inspector of reinforced concrete was present while the load was being placed upon this panel and until it was finished, and he verifies all of the statements made."

* * *

A Similar Experience

"Do you really believe that an ass ever spoke to Balaam?" queried a man who prided himself on his superiority to the old beliefs. Coleridge, to whom the question was put, replied: "My friend, I have no doubt whatever of it, I have been spoken to in the same way myself."



Sing Fat Building, Chinatown, San Francisco
Equipped with Otis Elevators

T. Patterson Ross, Architect *A. W. Burgren, Engineer*

Chinatown Architecture

ARCHITECTS and owners are co-operating splendidly in an effort to rebuild San Francisco's Chinatown in a manner that will be charactertistic of Chinese architecture. Several buildings designed along Oriental lines have already been built and others are under construction or being planned. T. Patterson Ross, architect, and A. W. Burgren, engineer, have utilized their best endeavors to design a structure that would combine the practical and business requirements with the Oriental features in exterior appearance and ornamentation. How successful they have been one needs only to look at the picturesque drawing accompanying this article. The building will occupy the northwest corner of Dupont and California streets, It will be four stories in height with an exterior of yellow pressed brick, ornamented with green glazed terra cotta. Lofty pagodas and ornaments representing the native dragon will add to the Oriental appearance of the building. The interior of the Sing Fat building is to be fitted up in a style of Oriental magnificence surpassing any building on the continent, and will be illuminated by several thousand incandescent lights.

Bricks and Brick Work in Architecture*

By ARTHUR PEABODY, Supervising Architect, University of Wisconsin

IN SPEAKING to you, gentlemen who are practical brickmakers I feel there are many things about bricks that you know and I do not. The point of view from which I know bricks and from which I can speak, is that of the architect only. The architect knows of them as the finished product. He is acquainted with their value in architecture. How architecture is sometimes misunderstood by the casual observer. It is closely bound up with building. The architect expresses himself in buildings and yet he is not a builder. In fact, some architects limit their work to preliminary designs, or schemes of buildings, and do not produce the actual building at all, leaving that to what may be called the ordinary practitioner. Their work is purely advisory and general in its nature and stops with the arrangement of the main elements of the plan and the architectural treatment of the exterior and interior, without considering in detail with what materials the work shall be executed, nor at what cost. Their work, however, is supremely important, being, in fact, that which makes the building excel another of similar capacity and cost.

Architecture is the human element in building. It is what gives dignity, grace, harmony, or we may say character, to an otherwise uninteresting pile of masonry. Beauty is said to be only skin deep, but who can endure the sight of a creature without that external covering which is so closely knit upon it, that to lose it, means certain death?

For this reason such qualities in brick as color, texture, form, are of the highest architectural value. A brick possessing great durability, high resistance to crushing and other good elements, may fail architecturally because it will not give to a building the higher qualities above enumerated.

One of the advantages of clay bricks is the great number of pleasing colors produced in burning. Another is the possibility of treating the face of the brick with another clay capable of burning to a good color, although the body of the brick is poor in this regard.

Some years ago great effort was made to produce bricks of absolutely even color and perfect geometric form. The results in the wall were monotonous in the extreme. Especially was this the case where the joints were thinned to one-eighth of an inch.

It is recognized today, that not one brick, but the whole number of them when built into the wall, together with the coloring produced by the mortar joints, is what gives the color value in the building. To this end the effect of dark headers is considered carefully by the architect, and the brick are laid in such a bond as will best accentuate the work.

So also the stone trimming about windows, entrances, and other parts, goes to modify the general tone of the building.

Besides color, the important thing is texture. In some parts of the country bricks known as "rain drops" are produced by weathering the bricks to a rough surface before burning. The resulting wall has a very pleasing rustic or rough texture. This is quite opposite to the glassy surfaces of some paving bricks, which are very difficult to manage, architecturally. Aside from this, paving bricks are quite satisfactory on account of the variety of quiet colors and their impervious surface that is free from efflorescence. This matter of efflorescence or "whiting" is wholly dependent upon a porous structure of the brick that absorbs the rain water and gives occasion for it to dissolve various salts from the mortar. Upon the evaporation of this water the salts crystallize upon the surface of the brick.

Proof of this has been shown by chemical analysis of the brick that exhibit no internal trace of the salts deposited upon their surface. Further proof is shown from the fact that sandstone of a porous nature will show the same sort of efflorescence, although no such salts are natural to the stone itself. So, too, floor tile will "bloom" when relaid in fresh mortar.

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* An illustrated lecture delivered before the Wisconsin Clayworkers' Convention, 1907.

Form is important, as between the "standard" shape and the long thin Roman brick. Absolute accuracy of form is very much less important, especially when thick joints are used.

The matter of joints is subject to fashion or "vogue," varying from one-eighth of an inch to one and one-fourth inches thick, as shown in some Italian work.

Brick work as an accentuated feature of a building detail is a modern use of the material. In Roman buildings, brick were used only for the wall mass, and most frequently were covered with a cement or stone facing. They were common brick.

Their excellence is attested by the solid character of Roman ruins, such as the baths of Caracalla and other similar buildings. It is but fair to say, that much of this solidity is due to the Roman cement or Puzzollana, in which the brick were laid. This deposit, laid down in past ages by the volcano Vesuvius, was the Portland cement of the Roman world. Its exact nature was unknown until long after the invention of artificial "Portland."

Today, blast furnace slag, essentially the same thing as lava, is made the basis of some of our best cements. In the West also, where the United States Government is constructing dams for irrigation purposes, the same Puzzollana is found and is made into "Portland" right on the ground.

The English recognized the possibilities and limitations of brick work as perhaps no other nation has. One of their cardinal principles was, brick for the wall mass, stone for accentuated parts. They required brick of good quality, good workmanship, close attention to such details as color, form and texture. Various bonds were employed which have become well known in America and there is an avoidance of the fantastic shapes and intricate decoration that sometimes defeat the Italian and German, not to say the French brick architecture.

Brick work in this country has made great advances in recent years. This is due primarily to improvement in the artistic quality of brick. The right appreciation of this by architects has resulted in greater demands upon the workmen for skill in laying, and so the brick building which forty years ago was classed as secondary, compared to those of stone, has taken at least equal rank with them.

Examples of monumental buildings of brick can be cited in any of our great cities. Probably the best models are to be found among the palatial houses of rich men, along with university buildings, churches, and some of the bank buildings in our Eastern cities.

Not only is there today an excessive demand for brick of first quality for all ordinary purposes, but brick has now a vogue, a prestige that it never enjoyed before.

It is the material against which least can be said, either from the artistic or the practical side. Of course, this applies only to the wall mass.

For mouldings, cornices, etc., in short, all distinctly decorative features, stone or terra cotta is necessary. With brick goes also tile, a natural complement as regards the roof. The same qualities that recommend one apply to the other.

Color, texture, form, all variable at the will of the maker. Useful, that is to say, "working values," equal to brick.

In all this discussion, wearing and enduring qualities have been pre-supposed, just as honesty and morality are taken for granted in the consideration of a man's fitness for places of dignity and honor.

The Professional Practice of Landscape Architecture

By WILBUR DAVID COOK, JR.

SO LITTLE is known throughout this section of the country relative to the professional practice of Landscape Architecture that a short article may prove of interest to your readers, showing the relation of the landscape architect to his client, to the architect, engineer, gardener, nurseryman and contractor.

From the landscape architect's point of view he should be the first to be called in. The time for a client to call in the landscape architect is before he has purchased a foot of ground, be it a city lot of fifty by one hundred and fifty or a country estate running into acreage.

The reasons for this are almost too numerous to mention. A few, however, will suffice. In the first place the landscape architect is in most cases a better judge of soil conditions than the average client. He is also a better judge of the possibilities of the development of a chosen site; of the value of existing topographical features, ledges, trees or shrubs, etc.; value of views, and the amount of land necessary to be purchased to carry out a comprehensive scheme for its future development to the fullest advantage. His training has been such that he sees much that is ordinarily overlooked.

Usually he is not called in until the client finds himself in a hole and wants some one to pull him out. Under these conditions all that remains to be done is to make the best of a bad proposition.

He sometimes finds that his client has a house perched upon a hilltop with an almost impossible approach road zigzagging back and forth in the foreground and benched into the hillside, with sharp turns supported on one side with railroad embankments and on the other by a deep, heavy disfiguring cut. The house itself may be fine architecturally, but not suited to that particular location. For instance, a house that may look well on a level piece of ground, may be entirely out of place on a hilltop. Another very common mistake is that enough ground has not been purchased to develop the property to the best advantage.

The landscape architect does not pretend to tell his client that he must have a certain style of architecture, but he does suggest, in a general way, the type of house best adapted to the situation, perhaps in this particular case a low squatty house of a rambling character, made to look as though it had grown on the site and had become as firmly rooted to its location as an adjoining boulder.

When the site has been determined the landscape architect recommends that a competent engineer be called in to make an accurate topographical map of the property, showing contour intervals for every foot of elevation, in some cases for every five feet, from specifications which he furnishes the engineer. A map of this kind is also of great assistance to the architect.

A survey for the purpose of landscape development is an entirely different proposition from the usual survey. It calls for information almost invariably left off by the surveyor, and this is another reason why the landscape architect should be called in before the survey has been made. Such information he has to have and it is much more economical to secure it at the time the original survey is made rather than to have to have it added subsequently.

Some clients absolutely refuse to have a survey made, deeming it an unnecessary expense. It is best in such cases to refuse to have anything to do with the work. The landscape architect is not a wizard and he will save himself endless annoyance by turning down this kind of a client. The client's point of view generally is that he only intends to carry out a little work this year and a little next. Even so, it is best for him to have the entire property surveyed, and to have a comprehensive plan prepared, covering the entire work. This does not prevent the carrying on of the work from year to year, as circumctances permit, and in the end he has a unified result that is worth while.

A few clients purchase their property, have it surveyed, have a plan prepared, and establish their border plantations from one to two years before building. It takes longer for plants to grow than it does to erect a building under normal conditions.

The topographical survey is used as a basis for all subsequent work. A preliminary sketch plan is first prepared, establishing tentatively all the proposed floor elevations for the various structures, the design for the layout of the property, etc. This plan embodies the suggestions of the landscape architect for the development of the scheme, together with as many of the client's ideas as may be consistent with good landscape design.

He indicates by a block sketch, the location of the living rooms with reference to the views, of the service arrangements with reference to the prevailing winds, the house location in relation to the boundaries, approach drives, service drives, garages, lodges, etc.; showing, also, where border or screening plantations are desirable to frame in or cut out certain vistas, retaining walls, arbors, pergolas, pools, summer houses, basins, fountains, and hedges.

The architect should now be secured. There is no objection to having him from the first, provided he is the right sort. His suggestions are many times of great value to both the client and the landscape architect. Assuming, however, that he has not been called in, whom shall we employ? Usually the client has his own ideas on this subject; if not, and the landscape architect is requested to suggest some one, he will do so. If a certain type of house has been decided upon a specialist upon that type is usually suggested.

The preliminary plan is then gone over with the client, architect and landscape architect and approved or revised as the case may be. The architect is then requested to prepare plans, and the landscape architect working drawings. These working drawings consist of grading plans, profiles of walks and drives showing proposed grades and cut or fill, and cross sections taken at typical points. With these plans, estimates are prepared of the amount of earth to be handled and the disposition of the same upon the property. Should the amount of cut or fill prove excessive a revision of the plans becomes necessary to make the quantities more nearly balance. All of these details being worked out on paper the client knows in advance what he is up against.

With the approval of the grading plan, contracts and specifications are written and submitted to two or three reliable contractors for bids, if the work is to be done by contract.

When the contract has been let the landscape architect prepares planting plans. This planting plan shows the character of the trees and shrubs to be used, together with the location of each individual specimen and the quantity of same. With the approval of this plan planting lists are made out and sent to local or foreign nurserymen to be filled. All plants are furnished to the client at cost and billed directly to him by the various nurserymen, the bills, however, being made out in duplicate and forwarded to the landscape architect for approval after the shipments have been checked up. The landscape architect does not make a profit on nursery stock, nor does he assume any responsibility for the payment of such bills.

Upon receipt of the nursery stock ordered the client notifies the landscape architect of its arrival, who in turn instructs the gardener as to its disposition either direct to its final location or to be heeled in at designated points until wanted.

Many clients as well as architects have the mistaken idea that the landscape architect superintends the work. This is not so. He only supervises it from time to time as may be necessary with reference to matters of design. He is not even the agent for the owner, but is engaged solely as his professional adviser.

Some of the Eastern architects used to draw a line about all purely architectural constructions and say keep off, we desire to control these features ourselves. The landscape architect has no inclination or desire to invade the field. The acquisition of either profession is a life-long study, but he does want some say in the matter and the best results are achieved by working in harmony with each other. It is only natural that they should work together, as the combined work will be judged and approved as a whole or condemned.

In justice to the architects it must be said that in self-defense they have sometimes stepped over into the realms of an unfamiliar profession rather than to leave their work in the hands of the average gardener.

In closing it may not be out of place to note the difference between the architect's charges for his professional services and those of the landscape architect. Most clients are familiar with the charges of the former, which are based on a percentage of the cost of construction. The landscape architect charges for his professional advice and not on the cost of executing his work.

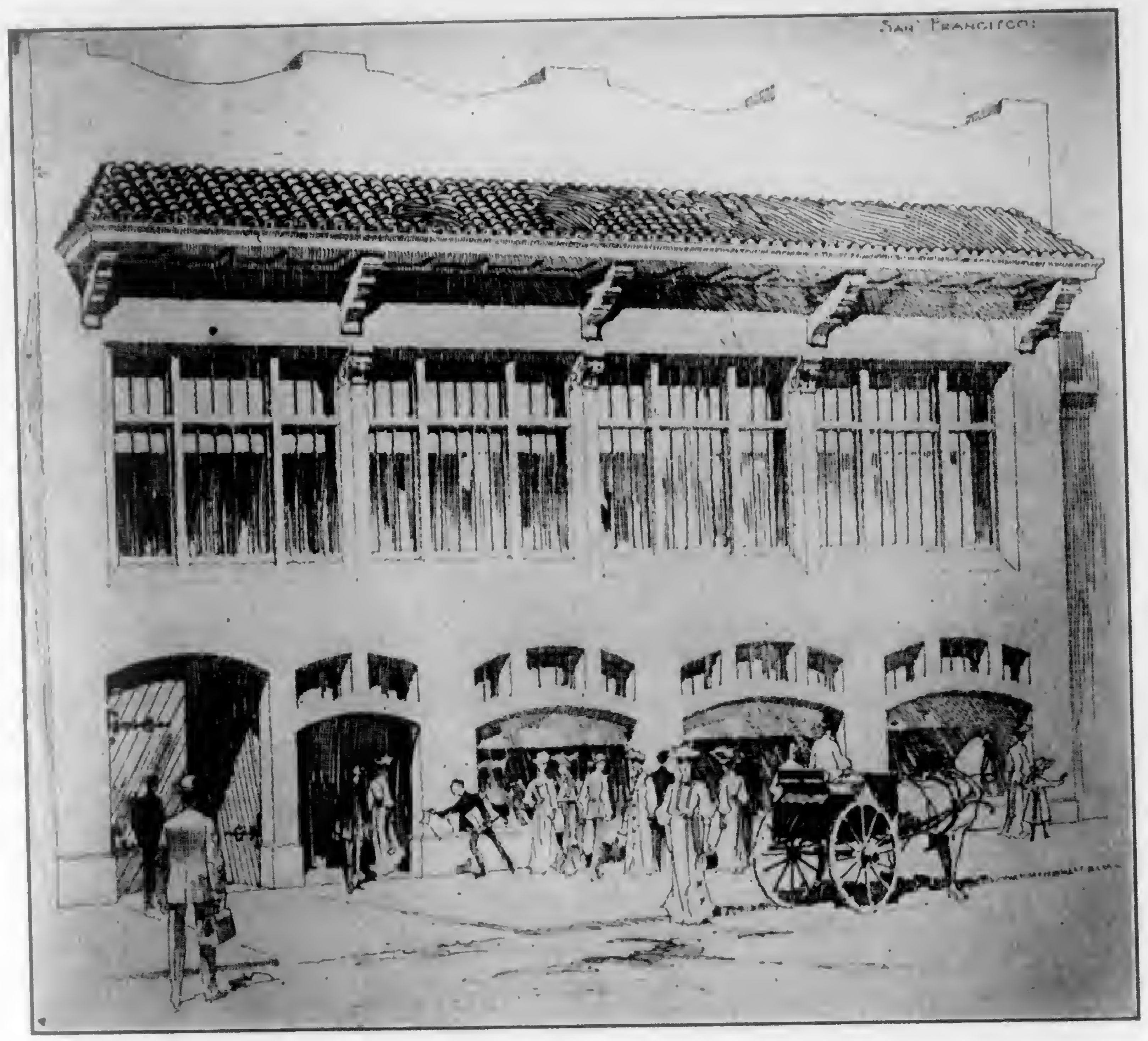
It seems difficult for an adviser whose compensation increases exactly in proportion to the increase in the cost of the execution of his work, to at all times prevent the suspicion arising in the minds of his clients that the many good things or the good way of doing things he may have occasion to recommend from time to time, are advocated partly, to increase the earnings of the adviser. Moreover, the value of the ideas embodied in the preliminary plans of a landscape architect varies much more widely, in different cases, in relation to the cost of execution than it usually does in the case of works of architecture, so that a fixed percentage on cost of improvements is not a satisfactory way of determining the designers compensation. For instance, two alternative plans for the approach drive on a particular country place may be so similar as to length and landscape advantages as to be worth the same professionl fee, yet it may cost two or three times as much to execute the one as the other, because of the larger amount of rock excavation called for, or because of some other topographical feature.

The landscape architect charges a professional fee for a preliminary visit to the property. What his charges will be for the subsequent development of the property depends entirely upon the size of the place, or difficulty of the problem involved. He will not, if he is conscientious, charge as much for a commonplace problem as he will for one which calls for greater skill and ingenuity in solving.

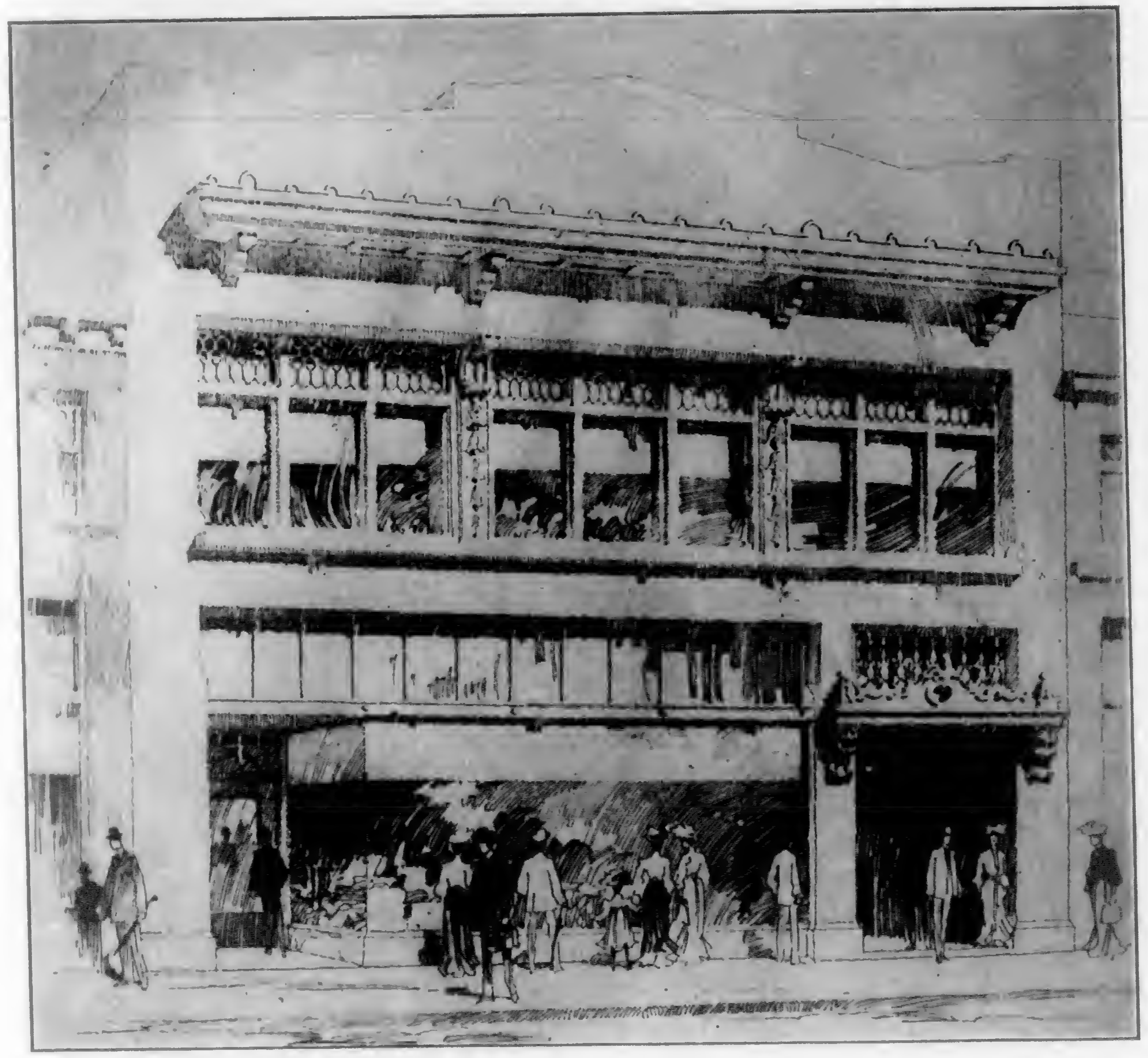
* * *

Resuscitated Eggs in Food

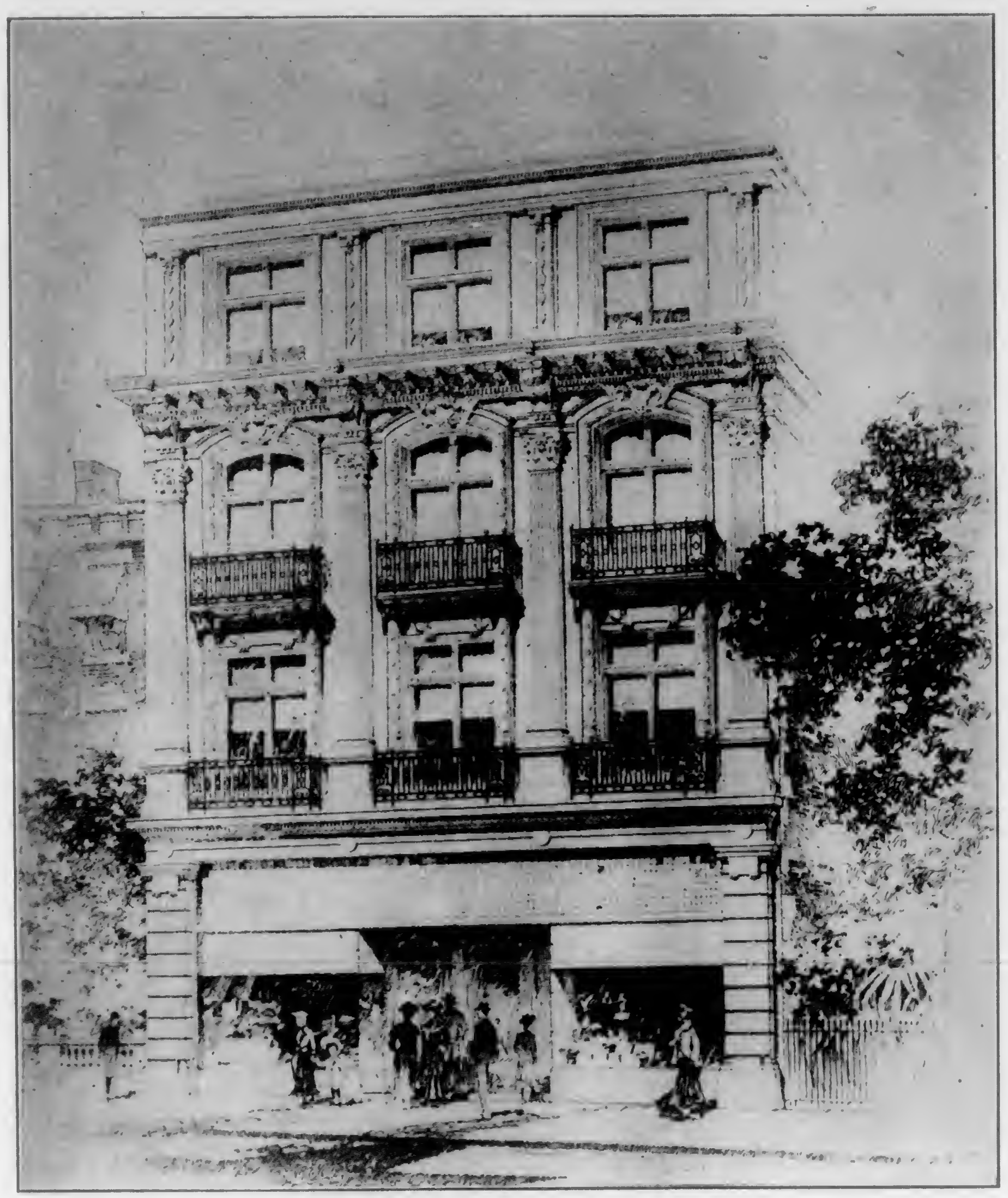
The miracle of the resuscitated egg I heard from a saleswoman with whom I worked for a season, writes Elizabeth Westwood in Good Housekeeping. She had been employed in a big wholesale bakery and knew much of crooked methods. This practice she told me was also in vogue among many of the domestic bakeries whose standing was questionable. At her factory, eggs had been bought in big tubs, already shelled. They were old stock, fast on their way to decay, and had been secured by a shrewd firm for almost nothing from the small dealers. The rejuvenators had shelled them with a patent egg-breaker, and preserved them with boric acid. She herself had known them kept on hand for months and they were guaranteed to last for year and a half, in a perfect state of preservation.



Store for McCann, Allen & Co., San Francisco *Houghton Sawyer, Architect*



Building for the O'Sullivan Estate, San Francisco *Houghton Sawyer, Architect*



Building for F. M. Green, San Francisco
Houghton Sawyer, Architect

In Perfect Agreement

Tender-Hearted Maiden Lady—It's a shame to go out and kill dear little birds! I could not do it!

Hunter (looking sadly at his empty game bag)—Neither could I.

* * *

Wait Awhile

Daughter—What! Mother, do you mean to say that I must marry that horrid Mr. Jones? I hate him, I detest him, I despise him!

Mother—But, my dear, you can tell him all that after you are married.

The Architect and The Painter

INSTEAD of regarding architects with dislike or suspicion, they should be considered the best friend the painter ever had, writes Henry Fenelon in the Plumber and Decorator. Let us look at it this way. Suppose no certain materials were specified. You are a master painter, one who takes the greatest pride in your work. No matter, therefore, how keen the competition, you will have in your job naught but the best materials by first-class makers. You are asked to give a price for a job. Little Stiggins, the painter, or Slasher, the decorator, is in against you. Either or both use the shoddiest materials. Well, when the tenders are opened you are simply "miles out"; you've "no earthly," and your prices have been the cause of unbounded merriment to the architect. Indeed, when he saw your price per yard he suggested to his chief clerk that the enjoyments of Whit-week had certainly caused you to forget the rudiments of arithmetic!

As I say, instead of growling because the architects are day by day still more stringently exercising their authority, we ought indeed to rejoice, for the stricter they are the fewer Slashers and Stigginses there will be in the trade, and you, the respectable employer, will—and it's about time—be able to demand a good price for good work and good materials.

Let me give you two instances; the first, a job under an architect who, while the work was in progress, was away. He had specified a certain well-known water paint to be used on the interior of a large new house. Several were in for this and, as usual, the lowest price was successful. Instead of this particular water paint being used from start to finish, the walls were twice coated with ordinary fast-bound distemper and once with the water paint. On the architect's return the job looked all right, and the colors on comparison with the firm's color card were excellent and a perfect match. In a few weeks the whole began to shell and peel off. The architect, by a very simple test, discovered the fraud. In vain the painter solemnly averred he had used the right material. The chemical test was enough, and every ounce of distemper and water paint had to be removed and the whole of the work redone at a cost borne by the painter. Not only that, but the floors, having been wax-polished, had to be done again, as also the skirtings and architraves, which had been finished white enamel.

Now, had not this fraud been discovered by a competent architect, who specified certain materials, the painter would have got off scot free to again compete with a decent chap like you; and from this you will see it was simply useless for you to waste ink, paper and time against him.

Another instance where an architect was not in evidence. This very same water paint the tenant was particularly anxious to have, and agreed on a certain price. The water paint was, for the sake of profit, adulterated with nearly half as much whiting, one room (red) being entirely ordinary distemper. Result—in less than six months a most horrible job. The contractor was called on the scene, and, relying on the ignorance of the tenant (a fruit merchant), stoutly declared he had used the material, and he produced his account for same. Just so; but that material had been used on another job, where an architect had specified it!

Now what is the result here? The tenant, disgusted with the look of the "water paint," has had two rooms papered, and is about to do the same with the others, and he says he will strongly advise his friends not to have this special paint in their houses.

Let me briefly give you a third instance. A house not a hundred miles from, let me say, Blackpool (that isn't really the town, but it will serve). No architect on this job. The tenant asked for this special water paint in every room and paid for it. Instead she got ordinary size distemper. Result, as usual, disaster! She also says she'll warn her friends never to have the material in their houses!

Now do you not see from these instances—and I could multiply them by the score—that if architects were in command, and vigilant and ready, such things could not occur? Moreover, there would be an absence of that worried look which is aging you so rapidly; for the wretched competition attributable to such practices quoted above would be a thing of the past, and life for a decent, honest, painstaking employer, such as I am sure you are, would be worth living.

* * *

Concrete for School Buildings

A SITUATION of more than ordinary interest has developed in Philadelphia, where the Property Committee of the Board of Education has under consideration the erection of new school buildings. A rather surprising report was circulated, giving the impression that after due consideration the committee was opposed to the use of cement and concrete in the construction of these buildings, and that in assuming this attitude it had the support and approval of well-known architects. This position seemed so radical that inquiry was made as to the true situation by engineers and architects who are making a specialty of concrete construction, and, as might have been expected, the report was found to be somewhat misleading. It transpires that opposition to concrete, especially on the part of certain members of the committee and various architects, is not so uncompromising as the report would make it appear. It has also been discovered that the committee is not at all prejudiced in the matter; but, on the contrary, is inclined to liberal views, with the hope of solving the building problem to the best advantage of all concerned.

The subject is one of moment, and brings up exceedingly interesting questions. It may be of interest to note that at this moment the most prominent journal in the United States devoted to insurance engineering is preparing reports from more than three hundred colleges and universities respecting fire dangers due to bad construction, which brings into prominence the value of concrete in buildings of this character. From the fireproof standpoint alone, concrete should not be discarded without the most extended and careful inquiry as to its value in this respect. It is hardly possible that any capable architect or engineer would in this day take the ground that concrete is not safe from a structural point of view. On that point there is abundant evidence to be found in Philadelphia, where many concrete manufacturing plants, some of them many stories high, have been constructed in recent years. In many, the wide-span girders and beams carry concrete floors especially designed to withstand the pressure and vibration of heavy machinery. Concrete will not only mean structural strength, but fireproof walls, stairways and roofs, if the Board of Education cares for that sort of thing. Concerning the artistic side of the problem, there may be cited handsome private residences and costly hotels built of this material, some of the most striking and notable among them having been designed by Philadelphia architects. In one instance, reports credit the committee with the statement that concrete construction requires great care and expert knowledge. Every properly constructed building demands this. From all that has been presented, we fail to see how concrete has been discredited. It is likely that the committee has heard but one side of the story, and before deciding the matter finally, its members would find it exceedingly interesting and instructive to invite before them some of the engineers and architects of known ability and standing who are achieving an enviable reputation in concrete construction. Let them hear both sides of the story.—Cement Age.

Cement Sidewalk Specifications

THE following specifications formed a part of the paper read by Albert Moyer, New York City, at the convention of the National Association of Cement Users in Chicago:

Drainage Foundation.—Excavate to a sufficient depth so as to get below the frost line, ram and tamp the ground thoroughly and evenly, fill in with clean cinders, broken stone or brickbats to within — in. of top of the established grade of the pavement (a sufficient number of inches to provide for the thickness of slab necessary to give sufficient strength for the character of the work it is to perform); tamp this drainage foundation well and evenly, thoroughly wet the cinders, stone or broken brick, place in position wooden forms in a manner necessary to accurately outline the top and external edges of the walk, the top of the form being located so as to coincide with the established grade of the walk. As an additional precaution, and where necessary to accomplish the purposes of drainage, side drains should be placed every ten or twelve feet, having a fall of not less than one-quarter inch to the foot, leading to some point forming an outlet for water which may accumulate. This outlet should be below the frost line and may be accomplished by a hole filled with cinders, stone or brickbats.

Concrete Base.—For a concrete base spread — in., number necessary to provide for the thickness of slab which will come to within one inch of the top of the established grade; this concrete to be composed of one part Portland cement and two and a half parts sand or quarry screenings, all passing one-quarter-inch mesh, and five parts broken stone or gravel, all passing one-inch mesh.

These specifications may be regulated if proportions can be obtained which will allow of a larger proportion of broken stone, at the same time giving maximum density. Tamp the concrete to an even thickness, cut same into uniform squares of not over six feet square, using a steel cleaver of not less than one-eighth inch and not over one-quarter inch in diameter. Fill the joints thus formed with dry sand, so that there is no possibility of the square blocks adhering together. Mark on the wooden forms the exact locations of these cuts. After each batch of concrete is laid as required, it shall be immediately covered with a top coat, or wearing surface, no dirt or dust having been allowed to accumulate on the base and the surface of the base to be wet or moist. Any portion of the foundation which has been left long enough to have the appearance of setting or hardening shall be taken up and relaid before the top coat is put on.

Place a 2x3 inch strip parallel with sides of walk, in such position as will form square blocks, of equal dimensions, not over six feet wide; brace same with stakes, but do not nail to frame; then cut a strip 2x3 inches, the length of which is to be the width of the blocks. Place this strip so as to form a square block. On inside of strips place thick tar or felt paper, one-quarter inch thick and three inches wide; fill in the space thus formed with concrete composed of one part Portland cement, two and one-half parts sand and five parts crushed stone or gravel, mixed thoroughly. Tamp concrete thoroughly to an even thickness of three inches, then remove strip; the tar paper will adhere to the concrete. Move the strip to the next position, place the thick tar or felt paper as before, and proceed the same with each block, laying alternately. Put on top coat before the first block made starts to set or harden, and in regular order as blocks were made.

Top Surface.—For wearing surface, mix one part Portland cement with two parts crushed granite or other hard stone, all of which will pass through a one-quarter-inch mesh screen, or good coarse sand; mix by turning with shovels, raking with a garden rake as each shovelful is turned, turn twice dry and twice wet; add sufficient water to make a plastic consistency, so that when floated or troweled very little water rises to the surface. Spread this mortar over concrete base to a thickness of one inch. Work to a flat surface with a straight edge, smooth down with float and trowel after surface water has been absorbed. Be careful to get an even surface, bringing no neat cement to the surface and avoiding float and trowel marks.

Cut top surface directly over cuts made in base; cut entirely through top and base all around each block. Finish joint thus made with a jointer and round or bevel all edges.

Monolithic Slab.—As an alternative, and instead of using a top coat, make one slab of selected aggregates for base and wearing surface, filling in between frames concrete flush with established grade. Concrete to be of selected aggregates, all of which will pass through a three-quarter-inch mesh sieve; hard, tough stones or pebbles graded in size, proportioned to be one part cement, two and one-half parts crushed hard stone screenings or coarse sand, all passing one-quarter-inch mesh, and five parts crushed hard stone or pebbles, all passing through a three-quarter-inch mesh. Tamped to an even surface, prove surface with straight edge, smooth down with float or trowel, and in addition a natural finish can be obtained by scrubbing with a wire brush while concrete is "green," but after final set.

Expansion.—Do not allow any block to bear directly against any solid body, such as stone curb, building, post, manhole rim, etc. Leave the same space (about one-quarter inch) between pavement and such fixtures as is between the blocks themselves. This applies to the base and top as designed to avoid cracks and chipping due to expansion and contraction from temperature changes. This space can be conveniently provided for by the use of thick tar paper or felt, waterproofed with any of the reliable waterproof paints.

Protection and Seasoning.—Immediately as finished cover pavement so as to protect against rays of sun and drying, raising covering a few inches so as not to come in contact with the surfaces after pavement has reached hard set, sprinkle frequently, two or three times a day, with a garden hose or sprinkler for a week or more.

* * *

The Need for Clean Men

If one were to go to the President of the United States and ask him to name the country's greatest need, he would reply in his quick, conclusive way, "Clean men." He knows smart men there are by thousands; rich men abound more than in any other age of the world; able men are found in every State and township, but even from a population of eighty millions the chief executive has difficulty in finding the man of exceptional character for a post which requires a square and flawless morality. It is to his credit that he misses no opportunity to preach clean manhood. But neither Presidents nor preachers nor teachers can do the work of fathers except in their own families. We do not mean to underestimate the marvellous influence of the mother. In most lands men who reach success give their mothers the credit. "All that I am I owe to my mother," said Lincoln. "It was you who taught me to write so. You really did, dear mother," said the crabbed Carlyle. We get our moral qualities from our mothers, our mental from our fathers, say the physiologists, and as we look back we find this maternal affection the loveliest thing on earth. But isn't there a conviction down deep in our souls that we should have done much better if our fathers had taken time and trouble to share our confidences in the years that counted most?—The Delineator.

A Collection of Tasty Lighting Fixtures by the Taylor & Sinclair Company

Interior Decoration

Symbolism in Decoration

DECORATIVE art to be lasting, must convey a meaning. The uneducated mind perceives little decoration beyond the pictorial, but the man who knows can obtain much satisfaction from his reading of a properly executed decorative work.

One, in viewing a structure, may see nothing but a decorative result that is rather pleasing. The student on the other hand, can fix, in the use of the symbolism employed, the object of the structure or the use to which it is applied.

The use of the Circle, the Ellipse, and their subdivisions in tracery all indicate the Gothic or religious character.

The Laurel and Olive owe their introduction to their symbolic influence. They were conspicuous in the tree worship of the ancient Greeks. The laurel was sacred to Apollo; it was the symbol of atonement; conquering heroes were crowned with it. The olive was sacred to Athena; olive branches were the prizes of victory of the Olympian games.

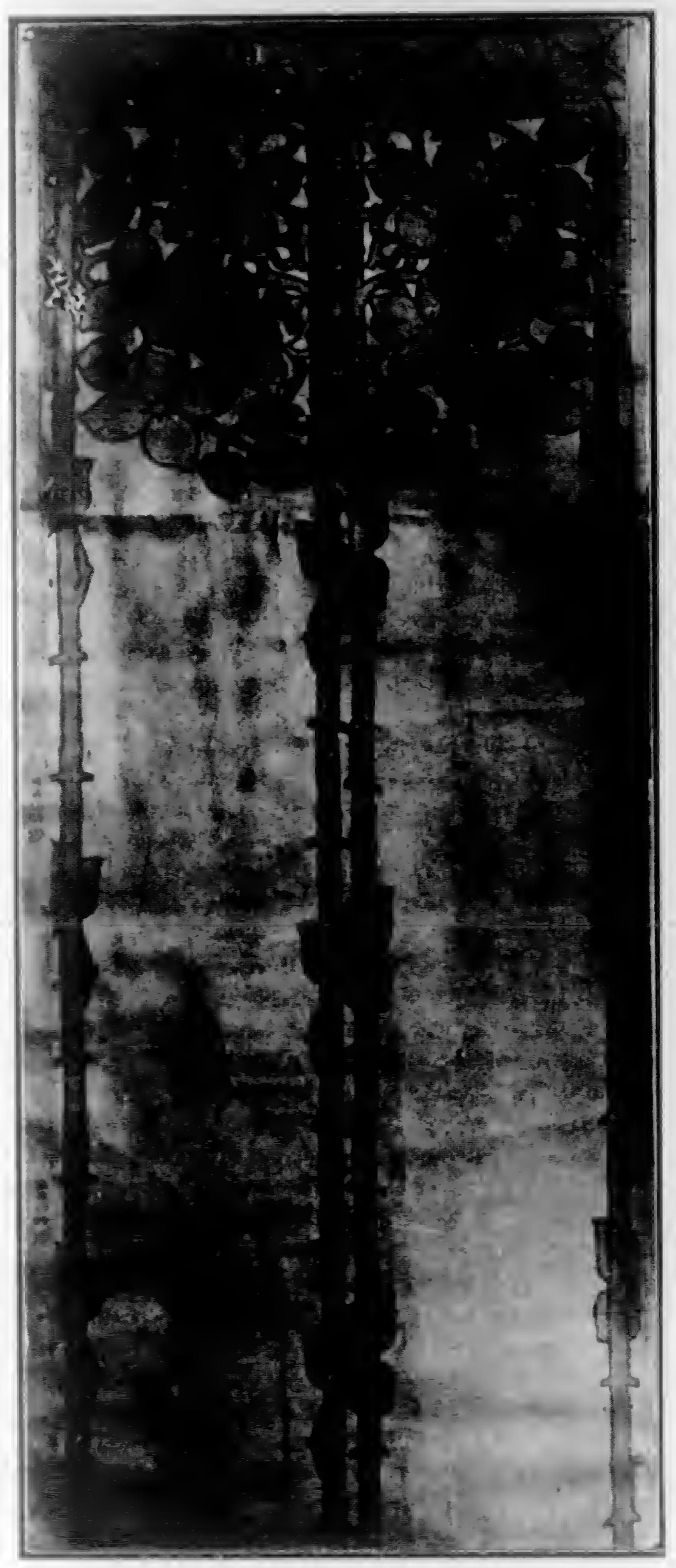
The Lotus and the Papyrus played an important part in the social life of the Egyptians, Hindoos and Assyrians. Even the paper of the Ancients was made of papyrus. The lotus was a symbol of the recurring fertilization of the land of the Nile, and in a higher sense it indicated immortality. The palm was a symbol of victory.

It is easy to understand how the vessels of religious rites passed into the decoration of religious edifices. In the antique style the altars, tripods, candelabra, sacrificial axes and sprinklers were introduced naturally.

In the Gothic period the symbol of the cross, the marks of priestly dignity, the suggestion of the passion, became part of the decoration.

It was the custom of the Greeks to hang upon the trunks of trees the weapons which the flying enemy had left behind. These tokens of victory were called trophies.

The Romans erected artificial trophies of stone or bronze, and since that period trophies have been used for innumerable purposes; the grouping of warlike weapons and the grouping of tools and instruments, to symbolize some special idea.



One of the New Panels

We have symbols of art, music, painting, sculpture, architecture; symbols of science, mathematics, astronomy, chemistry; symbols of commerce or technical science and trade symbols.

Singing, for example, is symbolized by a lyre, with or without sheets of music; music by violins, flutes, horns, Pan's pipes, etc.; dancing by the tambourine, castanets; acting by mask, painting by brush and palette; sculpture by the hammer, chisel and works of sculpture, busts, torsi; architecture by square, straight edge and compasses, usually in combination with capitals; the railroad and steam are symbolized by a winged wheel, the telegraph by coils of wire which radiate lightning; trade is represented by casks and bales of goods on which the caduceus (a staff around which winged serpents are twining—the attribute of Mercury) is resting; agriculture has the plough, the sickle, the scythe, etc. Where the trophy or symbol is used properly one may trace thereby the period of design with little difficulty.

Among the Greeks and Romans the lion was regarded as the guardian of springs and gates and temples; but in Christian art it is often the emblem of the evil principle (the enemy who goeth about as a roaring lion seeking whom he may devour).

The crusades of the twelfth century introduced the lion into heraldry.

The griffin is the union of the lion's body with the head and wings of the eagle. The griffin is a symbol of wisdom and watchfulness.

The eagle has been used in decorative art since the earliest times. Next to the lion it is the most used heraldic creature, and adopted by the United States, Germany, Austria, Russia and France.

The dolphin of ancient times enjoyed a kind of veneration which protected him from attack.

The use of the mask dates back to the harvest games of the earliest Greek period. From the games it was transferred to the ancient theater, in which the actors all appeared masked. From theatrical the mask passed to artistic uses, and was utilized in Pompeiian decorations. It was naturally adopted in the Renaissance period.

Ribbons have no significance. They are used as labels to bear some motto or as purely decorative features. In the antique form they often terminated in an acornlike knob; in the Middle Ages they were used curled and quaint; in the Renaissance they developed in various free styles, often divided at the ends like a pennant; in the Louis XVI style they were used for their design features.

The use of the circle and its subdivisions in design all indicate the Gothic character, but there are exceptions to the rule, besides the Persian and Indian types, which during the period of Saracenic conquests show the influence of Gothic art. There are examples of Sicilian design, that are identical with the Roman design. The reason for this is that the Sicilian took it from the Byzantine, and the Byzantine took it direct from the Roman.

The Chinese and Japanese also used the circle in their respective characteristics. Again the lotus motifs introduced mark it as Egyptian.

The Gothic circle was utilized usually in circumscribed squares, but in the sixteenth century the design was treated in a more liberal spirit. The mediaeval circle treatment is also clearly defined, while at a later date the circle is relegated to a structural background or framework upon which early French Renaissance forms of classic design are built.—Wall Paper News and Interior Decorator.

* * *

The Decorative Periods

Arranged by C. WALTER TOZER

Byzantine—328 A. D.—1451 A. D.—Early, 328 A. D.—550 A. D.: Constantine I, 272—337; Emperor, 330 A. D.; Best Period, 550 A. D.—1000 A. D.; Late or Italian Period, 1000 A. D.—1451 A. D.

Constantine I, surnamed the Great, became Emperor of Rome 306 A. D., and was the first Roman Emperor to adopt Christianity. With his conversion Christian art emerged from the catacombs, and for 700 years all art and architecture was lavished on churches and ecclesiastical trappings. In 330 A. D. he removed the capital of the Roman Empire from Rome to Byzantium; hence the name Byzantine is given to all Christian art previous to 1000 A. D. Later the name of the city was changed to Constantinople, and in 1453 it became a Turkish city.

Greece became a Roman province, but the taste of the Greeks spread over the Roman Empire. When the Roman Empire was divided into the Eastern and Western Empires, Greece became attached to the Eastern Division, frequently called the Byzantine Empire and later the Greek Empire. Mohammed II, in the fifteenth century, put an end to this Greek Empire and it became a Turkish province. The Greeks were under subjection to the Turks for four hundred years and finally revolted. During this subjection they realized that they were a distinct people and exercised their art, which was naturally absorbed by the Turks. It is thus easily seen where the Byzantine form of decoration became influenced by the Greek and Roman, and we can see also how many of the old Greek forms have found their way into Turkish work. The Turks took much of the atmosphere of their art, especially that gorgeous, resplendent form which was practiced in Byzantium.

The Byzantine or Oriental Roman held sway from the fourth to the sixth century, and was permeated by the early Greek and Roman periods and influenced also by the East. It was a form resplendent in gold and brilliant color; the groundwork of many of the fabrics and many of the paintings was all gold, consequently the other colors, reds, blues, and greens required very deep and full tones. Even in enamel work gold was liberally used. It was an age of luxury. In the fifteenth century, Byzantine art flourished, and the late Italian form found Byzantine fabrics, woven and embroidered, the most valued of all textile works the world over. In the range of art treatment during this period, whether of a Greek or Roman character, or of the more Oriental type, the gold and deep primitive colors formed a distinguishing color characteristic.

The Byzantine style engrafted Christian sentiment upon reminiscence of the Greek and Roman, and exercised a powerful influence on all arts of the Middle Ages. When the Mohammedans overran Byzantium and established their capital in what is now Constantinople, they adopted Byzantine art and carried it through all Southern Europe and Asia.

The great, significant fact of Mediaeval art is that it was Christian. There is a close connection between religion and art in all the ancient historic styles. Under Constantine and after Christianity became the State religion of the Roman Empire, it began also to dominate art and architecture. It was Oriental in feeling in the Eastern part of the Empire. In the West, however, the Germanic and Celtic influences tended to differentiate the Christian Roman from the Byzantine forms. This was due to the fact that the West was overrun and possessed by Germanic tribes.

Difference in language, however, did most to alienate West from East—Greek being the language in the East, while Latin was the language of the West. A third great language, Arabic, and a second great religion, Mohammedanism, came to the front rapidly. The new religion spread with wonderful rapidity, and in a few years Arabia, Persia, Syria, Sicily, Egypt and the rest of Northern Africa and Spain came under its influence.

The innumerable evolution stages, and the periods affected by commercial absorption or by conquest or by the spread of the Christian religion, are confusing. The Saracenic conquests carried the arts of one country to another, and combined and assimilated the Mohammedan and Byzantine characteristics. The Crusaders also scattered the Byzantine and Far Eastern art through Europe.

Early Christian is an expression frequently synonymous with Byzantine, for Byzantine was an art full of Christian symbolism. Saracenic is an expression interchangeable frequently with Moorish, Arabic, Arabian and Alhambraic.

SARACENIC.

The Saracens were followers of Mohammed, who preached the unity of God. When he fled from his native land, Arabia, he was accompanied by trusted followers, and they were called Saracens. Mohammed gained many victories over his enemies, and at his death left an ardent band who spread the faith by means of the sword.

(To be Continued)

Among the Architects

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Architects Exonerated

The recent verdict of a jury in Judge Conrey's court, Los Angeles, in a suit of Mrs. Phillips against the Bixby Hotel Company of Long Beach, was against that company alone and not against the architects. The court had early in the hearing rendered judgment for the architects, John C. Austin and Frederick G. Brown, the lengthy examination following pertained solely to the hotel company. The court held that there was no faulty work on the part of the architects. The jury awarded Mrs. Phillips the sum of $10,000. The case will be appealed. The verdict also excluded Contractor F. L. Spaulding.

Oakland Has New Building Law

The new building ordinance of the city of Oakland is now in effect and some radical changes have been inaugurated in methods of construction. The ordinance was drafted by a commission composed of J. D. Galloway, engineer; Walter J. Mathews, architect; W. T. Veitch, builder and contractor; Councilman Baccus and ex-Councilman Thurston, in consultation with the members of the Board of Public Works, and is declared by building experts and architects to contain more modern ideas on construction than that devised by any city on the Coast. In its principal provisions it follows closely the San Francisco ordinance, but contains more details regarding electrical wiring and partition work.

"The Oakland ordinance is, we think, as good and fair a law as has been devised for the protection of the builders and the property owners," said Walter J. Fawcett, secretary of the Oakland Board of Public Works. "It embodies the very latest ideas of construction of the large Eastern cities and is a big improvement in many respects over the San Francisco building regulations. With us hereafter nothing will be left to the discretion of the builder or the architect. Every little detail is provided for and every class of building is regulated in its entire construction, from foundation to roof, from the simple cottage to the modern skyscraper or Class A building.

"A special feature of the law is the attention given to theater construction. The enforcement of the ordinance will entail some changes in present theater buildings and compel managers to provide every care for the safety of patrons. We do not require absolutely fireproof construction, but theaters must be of fire-resisting material, with ample exits, which is the provision of ordinances lately enacted in the big Eastern cities. The old Oakland building ordinance had many loopholes; the new one has plugged these up and will, so the board expects, result in a greatly improved class of construction on the Oakland side of the bay."

Los Angeles Engineers and Architects

Some sixty members of the Engineers and Architects Association of Los Angeles took part in their regular monthly banquet at Levy's on July 23d, after which they were entertained with a description of the scenes and progress of the work of construction of the Panama Canal by United States Senator Frank P. Flint, the guest of honor.

He was introduced by the president of the association, J. B. Lippincott, and gave a very interesting account of what he saw during his trip through the canal zone. He told of the piles of junk, iron and steel left there by the French workmen. He paid a high compliment to the United States Sanitary Corps for their work in cleansing the city of Panama and putting the place in a fit condition.

In the construction of the canal there are sixty-five steam shovels, two thousand locomotives and three thousand freight cars employed. He was of the opinion that the great Culebra cut will be completed and almost forgotten before the Gaton dam and locks are ready for occupancy. He estimated that in nine years the people of the United States would be making trips between the two oceans.

To Repair Postoffice

At the last session of Congress an appropriation approximating half a million dollars was made for the purpose of repairing the damage to the San Francisco Postoffice building made by the earthquake and the dynamiting of buildings in the vicinity. Nothing was accomplished, however, in the way of beginning the work until recently when the ten thousand dollars' worth of window glass shattered by the explosion was replaced.

Superintendent Roberts explained that the Treasury Department was delaying the work until the light earth tremors, which occurred from time to time up to a few months ago, had subsided. The earth having settled to its normal calm the Treasury Department has had plans made for the repairs, and the work will be begun as soon as possible.

Much of the granite on the northeast and west sides of the building was cracked by dynamite and this together with cracked marble slabs in the interior will be replaced with new materials.

Mr. Roberts is having difficulty selecting a site for the new Postoffice building at San Diego. An appropriation of $30,000 was made by Congress, but thus far every site that has been selected has cost so much that if purchased there would be little left of the appropriation for a building.

Thomas F. Osborn, C. E.

Thomas F. Osborn, civil engineer and reinforced concrete expert, died July 20th at the Hearne Hospital, San Diego, after a brief illness. For several years previous to his death, he had been connected with Carl Leonardt as engineer. He was an authority on reinforced concrete and steel construction and at the time of his death was employed by Architect Harrison Albright in superintending the construction of the Grant Hotel and Spreckels building at San Diego.

The Huntington, Laughlin, Bumiller and Citizens' National Bank buildings were among the structures erected by him in Los Angeles.

Before taking up reinforced concrete work Mr. Osborn devoted his attention to steel construction and he was considered final authority in all matters pertaining to structural steel. As designer or consulting engineer, he had a hand in the erection of many of the great steel frame buildings of the Coast.

San Francisco's Wonderful Building Record

Six thousand buildings have been completed in San Francisco since the fire, and 3000 are in course of erection. In the burned area alone, and this is not the seat of all the building operations, seventy-nine reinforced concrete buildings have been finished or started since April, 1906. In addition to these there are nearly an equal number of steel frame buildings having concrete parts. Of the concrete buildings, there are four one-story, eleven two-story, twenty-one three-story, eight four-story, seven five-story, nine six-story, eight seven-story, seven eight-story and one ten-story.

The value of building permits issued since the fire amounts to the stupendous total of $78,250,620, and as the permits are usually taken out for a sum less than the value of the building, the total value of the buildings when completed will probably be between $90,000,000 and $100,000,000. In July alone the total value of the building permits amounted to $4,752,778. During the same month the permits issued in Los Angeles amounted to $1,245,174; in Oakland, $373,085; and in San Diego, $149,450.

The value of the building contracts let since the fire amount to $68,103,959. Of this sum $29,514,240 is represented by frame structures, $33,739,353 by brick or stone structures, and $4,949,366 by alterations.

Nothing, however, shows the vast amount of building going on as the receipts of building material. These figures are only available for the fiscal year

ending June 30, 1907, but their aggregate is almost inconceivable. During that period there arrived here 768,802,866 feet of lumber, 27,593,108 bricks, 517,360 tons of gravel and crushed rock, 276,115,200 shingles, 180,781,350 laths, 4,361,775 shakes, 80,317 tons of cement and 3840 tons of window glass. These figures do not include the shipments by all-rail routes, nor the millions of old brick that were used in reconstructing the city, nor the thousands of tons of gravel and crushed rock that have been taken from the city's quarries and pits. In fact, most of these materials, as well as most of the brick that have been used, do not show in these figures. The lumber alone is enough to cover the burned area with flats, and the cement would suffice for thirty buildings the size of the new Pacific building, which is the largest of its kind in the world.

Building operations are likely to be greater in the future even than in the past. Materials have decreased in price and the adjustment of the question of wages is being rapidly worked out to the satisfaction of both parties interested. There is no question but that building here in the past has been attended with great difficulties, but they are steadily being effaced. During the first few months after the fire, the freight congestion was such that it was nearly impossible to get materials at any price. and this fact deterred many from assuming contracts having a time limit.

Cement

One of the most important factors in the rebuilding of San Francisco under modern construction conditions is cement. It has entered largely into the high class buildings that have gone up in the burned district, the amount used being something phenomenal. According to figures secured by the California Promotion Committee, there have been brought into San Francisco since the fire about 2,500,000 barrels of cement. Of this 1,300,000 barrels came from foreign countries, 200,000 barrels from the United States outside of the State, and 1,000,000 barrels from California.

A barrel of cement weighs 400 pounds, consequently, there were 1,000,000,000 pounds, or 500,000 tons of cement in these two and a half million barrels. To haul this vast amount would require 25,000 cars, or about 1200 trains. This one item will give some idea of the vast undertaking embodied in the rebuilding of San Francisco.

Mechanics Bank Building

Plans for the completion of the Mechanics' bank building have been finished by Architect L. B. Dutton, and the contractors, Lindgren-Hicks Company, are now taking bids in all lines of trade for this structure, which will be a steel frame building at the corner of Mason, Turk and Market streets. The erection of the frame was completed four months from date of letting the steel contract.

Personal Mention

Julius Krafft & Sons have moved to the Grant building, San Francisco.

William Curlett and family have been enjoying a month's absence from the city.

Maxwell G. Bugbee is in Europe. He is expected to return early in September.

Loring P. Rixford has been appointed a member of the San Francisco Board of Supervisors. Mayor Taylor's selection of the talented young architect meets with the approval of the profession.

Architects for Schools

The San Francisco Board of Works has refused to adopt a resolution to legalize the appointment of twenty architects selected by the last Board of Supervisors to prepare plans for new school buildings under the bond issue. Commissioner Eagan said that the Supervisors had usurped the powers of the Works Board in making the appointments and that he would oppose an indorsement of an act which was in direct violation of the charter.

Architects Offer Services

Supervisor Loring P. Rixford, chairman of the Building Committee, has received offers from several architects and builders to figure on the repairs necessary to the City Hall. Rixford said the names of the two selected soon will be made public, and in the meantime he is endeavoring to obtain the data on which the four architects appointed by the last board filed a report and received $6500 for their services.

Architect's Nephew Drowned

Clarence Dell, a student at the St. Matthew Military Academy, Burlingame, and a nephew of John M. Carrere, architect, of New York, was drowned while bathing in the Burlingame beach August 15th. In attempting to rescue the young man John B. Brooke, instructor in English, and George W. Smith, instructor in mathematics, were also drowned.

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THEY THAT LIVE IN GLASS HOUSES

Plans are being made, according to press reports, for a house to be built entirely of glass. This house, it is stated, is to be erected on Long Island, at a cost of $25,000, for a Wall street broker, who will seek sanitary perfection and all the health-giving qualities from sunlight shining through the roofs and walls as well as the windows of his residence. The house will be the size of a fifteen-room dwelling, but instead of having interior walls with hallways and doors, the two floors are to be divided off by means of Japanese screens of bamboo and paper as suits the occupant's fancy. Hollow glass blocks 12 inches long and 10 inches thick will be used in the construction of the house, and cream colored blocks will probably be chosen for the walls. An elaborate system of screens is to be devised to regulate the amount of sunlight. Electricity will be used for lighting and great care will be taken in installing the wiring and plumbing so that at night the house will not look like an X-ray photograph. An exchange comments that as the glass will be tinted and therefore will not be transparent the owner of the house will not be obliged to follow the old maxim that "People who live in glass houses should pull down the shades."

STRIKERS RETURN TO WORK. PROSPERITY ONCE MORE

Aside from the loss to each workman of several months' wages and a general hindrance to reconstruction, the various strikes among the San Francisco building trades have utterly failed in their purpose. The machinists will have to wait three years before they get what they demanded, while the stone cutters have returned to work with not so much as a compromise. The stonemen were out on strike nearly three months. Seeing the bricklayers advance their wages arbitrarily from one high point to another, the sandstone workmen thought to follow their example. Not content with five dollars per day they tried to make it five and a half, and six. The increase was denied and after three months' fight, the strikers have given up and those whose places had not already been filled, are back at the old wage schedule; glad, indeed, to be earning an honest livelihood once more.

The lesson is a hard one, and in its effects it involves not only those directly at fault, but others connected with them. With these two strikes settled, a final adjustment of a new wage scale as purposed by the Builders' Exchange, and the considerable drop in building material, there is no reason why San Francisco should not fairly boom.

Seth Babson, Architect

SETH BABSON, Architect, died July 10, as the result of an operation. He was 79 years old. The following tribute to Mr. Babson's character and professional life was prepared by Messrs. Henry A. Schulze, William Curlett and Sylvain Schnaittacher, a special committee from San Francisco Chapter, American Institute of Architects, of which the deceased was a member:

"Your committee herewith places before you a brief tribute to the memory of our old associate, Seth Babson, with the suggestion that a copy of the same be forwarded to the survivors of his immediate family, to the American Institute of Architects at Washington, D. C., to the State Board of Architecture (of both which bodies he was a member), to the professional magazines and journals, and that a copy be spread upon the minutes of our Chapter.

"Seth Babson, well and honorably known the length and breadth of California as one of the pioneers in the architectural profession in this State, passed to the silent majority on July 10, 1907, having reached almost his 79th year, maintaining his vigorous active interest in his chosen profession to within but a few days of his death. For over fifty years he was identified with the architectural and building activities of this State and throughout that long career won and maintained the confidence and respect of his many clients. He was elevated to signal distinction by his professional brethren on many occasions, the most noteworthy of which was that of president of the San Fran-Francisco Chapter of the American Institute of Architects which office he filled for many years. In 1901 his chosen State honored him through his appointment by Governor Gage as a member of the State Board of Architecture, which position he held at the time of his demise.

"He was born in Maine, which State he left to settle in Massachusetts and where he remained to the year 1850 at which time he transferred his activities to California locating at Sacramento when he at once entered into his professional life and where he continued for the succeeding twenty years being intimately associated during that period with the pioneer projectors of the Central Pacific railroad then in course of construction, and the residences built at Sacramento then the finest in the State by these individuals bear witness of his professional ability and activity, moving later to Alameda where he lived for the past twenty-eight years continuously practising his profession up to the time of his death.

"He loved his home and his profession and devoted his life to the service of both. His long professional career matured and mellowed his judgment which was used to the advantage of his younger brethern on all occasions and was therefore often appealed to; being blessed with a share of the leisure that comes of successful old age there was no service that he was not ready and willing to assume to further the elevation and dignity of the cause of architecture and many of the successes of the body at large are directly attributable to his unsparing efforts.

"His death came as the result of an operation made necessary from an injury received some months before his death. Although not incapacitated entirely after the injury, his age and lack of recuperative power, when the operation was resorted to for relief, acted against his recovery and he passed away suddenly from heart failure with little suffering and wholly unconscious of the fact that his end was near.

"He is survived by his widow and three sons, to whom this tribute by his brethren is offered as a recognition of the esteem with which is held the memory of his modest character, retiring disposition and thoughtful interest in all he held most dear.

"HENRY A. SCHULZE,
"WM. CURLETT,
"SYLVAIN SCHNAITTACHER,
"Committee."

The Publisher's Corner

Demand for Tile

The Western Art Tile Works are furnishing material for a $50,000 house on West Adams street, near Arlington, Los Angeles, Hudson & Munsell, architects. The house will have terra cotta exterior, partitions and ceilings. The cellar walls will be of white porcelain finish hollow blocks.

The Highland Park Masonic Temple is constructed of hollow terra cotta building blocks, tooled and faced in the natural color (a pinkish buff) manufactured by the Western Art Tile Company. Plans have been completed by Kelly & Newbery, architects, for a two-story hollow block house for Mr. Douglass. A. Dudley, architect, is designing a two-story apartment house, to be entirely of hollow tile construction. Architect Puttcamp is at work on a $20,000 tile sanitarium to be built in Eagle Rock Valley.

This company is furnishing twenty-three thousand feet of glazed facing tile for the Pacific building at Market and Fourth streets, San Francisco, Charles F. Whittlesey, architect.

Mexican Onyx in Demand

G. A. Bushert is the new representative of the New Pedrara Mexican Onyx Company in San Francisco. His address for the present will be 63 Fremont street. The company has contracted to furnish onyx fixtures for the First National Bank, Oakland; First National Bank, Long Beach; and the San Diego Savings Bank; also the fine entrances in the Elks hall and Scripps building, San Diego.

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THE PRINCIPLES OF WOOD FINISHING

The Necessity of Properly Preparing the Foundation for the Finish

The correct principle of finishing all kinds of wood is to produce a perfectly smooth and elastic surface with as little varnish or finish as possible.

To accomplish this the surface of the wood must be first made even by filling the pores or grain with a hard, firmly fixed and unchangeable substance, which must be transparent and not shrink or sweat.

There is nothing more unattractive than the interior woodwork of a building which has been improperly treated and finished. Instead of its full life and beauty being brought out and preserved, it has been obscured and made lifeless, and so finished that in time it darkens and becomes more and more unsightly, or else the finish sinks in and is destroyed.

There is but one way of obtaining a permanent finish on wood, and that is to properly prepare the foundation. All woods have innumerable pores, which it is necessary to fill before finishing.

An experience of many years has demonstrated that there is but one base that can be successfully used to fill the pores of wood. This material is silex, especially prepared from rock crystal quartz.

When the crystalline pieces of quartz, infinitesimally small, are combined with especially prepared oils and japans, and the pores of wood are filled with this material, a permanent foundation is made for the finish.

There is but one filler on the market which is made from the above materials, and which is recognized by all leading architects as an article that produces a permanent finish, and which, when used on wood develops its full life and beauty. This is the famous Wheeler Patent Wood Filler, recognized the world over for superiority and economy.

It is not to be denied that the pores of wood can be partially filled with varnish or other wood fillers and substances, but it is an admitted fact that it is impossible to properly fill the pores of the wood, and obtain a permanent finish with any other article than the Wheeler Wood Filler.

It is for these reasons that this article is used by the leading furniture manufacturers, car builders and piano manufacturers in Europe as well as America.

It is also invariably specified by all well informed architects who desire to obtain on their work the best finish.

About four years ago, one of New York's leading hotels was completed. The contract for the finishing of the woodwork was given to a contractor who used inferior materials, and at the time the work was finished it looked sufficiently well to be accepted by the architect. Today, however, the entire finish on the woodwork in the building has sunken and is a disgrace, and it will have to be refinished at considerable cost.

This would not have happened had the proper foundation been made.

When it costs no more to use the best wood filler, properly preparing the foundation, there is no excuse for such cases as above mentioned, which is an example of something that is continually occurring wherever architects are not explicit in their finishing specifications, or where contractors attempt the substitution of inferior materials, falsely believing that these materials are cheaper.

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Among the prominent buildings recently erected where Wheeler Filler has been used with entire satisfaction, might be mentioned the following:

New York City: New York Stock Exchange, New Plaza Hotel, St. Regis Hotel, New Hoffman Hotel, Hotel Astor, Lombard Apartment Hotel, New Custom House, Broad Exchange building, Bismark Apartment Hotel, Atlantic building, Rossley Apartments, Myers building, Korn building, Broztell Hotel, St. Luke's Hospital, etc, etc.; Annapolis, Md.: Naval Academy buildings; Harrisburg, Pa.: State Capitol, Railroad Station; Philadelphia: The Belgravia Apartments; Chicago: Post office, LaSalle Station, Monadnock building, Marquette building, Railway Exchange, New Tribune building, Studebaker building, etc., etc.

The manufacturers of Wheeler Patent Wood Filler, The Bridgeport Wood Finishing Company, of New Milford, Conn., New York, Chicago, Philadelphia and Boston, have recently issued a booklet—Modern Wood Finishing—which goes into this whole subject quite fully, and which it will pay all architects to carefully read.

It can be obtained by writing the company, or from The Whittier Coburn Company of Los Angeles and San Francisco, who carry in stock a very complete line of these standard wood finishing products.

Increased Use of Pneumatic Tubes

The A. C. Rulofson Company, of San Francisco, Pacific Coast agents for the Single Tube Transmission Company of Boston, report increased interest in their line. They are about completing a very elaborate "Davistor" system in the Fairmont Hotel. They have recently installed this system in the offices of the San Francisco Call, San Francisco Chronicle, and the Wells-Fargo Nevada National Bank. After carefully investigating the different pneumatic systems, the Claremont Hotel of Berkeley, Langley & Michaels' Wholesale Drug House, and the Crocker National Bank, have selected the "Davistor" as the simplest and most desirable for commercial purposes, and have placed their contracts with the above name company for complete systems. It is only within late years that pneumatic devices have been adopted for use in mercantile houses, banking rooms, factories, etc., and the cost worked down so that they can be economically installed. Heretofore the ponderous machinery and complicated mechanism have prevented any but the largest hotels and great department stores from installing pneumatic tubes, as they were not able to incur the first cost of installation and the unreasonable expense of maintenance. All of these conditions have been carefully considered by the inventors of the "Davistor" devices, and the first cost is now within reason, and the cost of operating practically eliminated.

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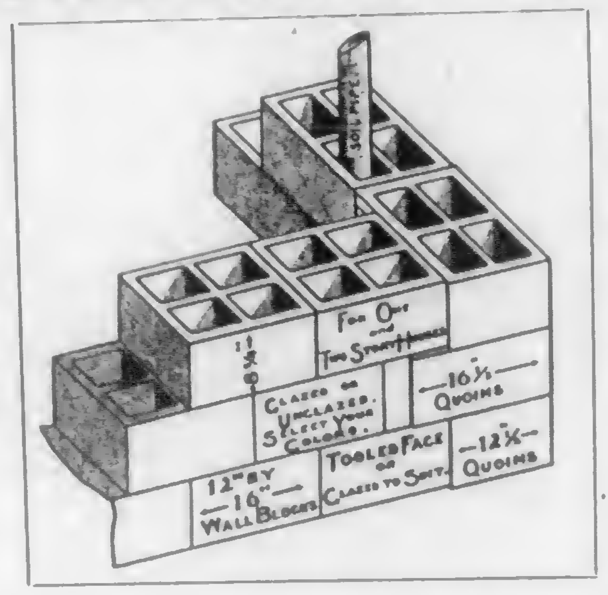
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138 26th Ave.

The "Bay Shore Cut-off"

The largest railroad cut on the Pacific Coast, if not in the whole country, was very recently completed by the Southern Pacific Company, on what is known as the "Bay Shore Cut-off," near San Francisco. This colossal cut was made for the most of the distance through rock. The total excavation reached 800,000 cubic yards; entire length of the cut is 1250 feet; width of cut at the top, 300 feet; width at the bottom 60 feet (for four tracks); depth of cut at highest point 150 feet. From these figures, some idea may be formed of the dimensions of this cut.

More than two years were required to complete this enormous cut. A large force of men were employed, supplemented by several large dump trains and six powerful steam shovels. The total cost of the work reached about $500,000.

It may be added that the total length of the "Bay Shore Cut-off" does not exceed nine miles, yet the cost of constructing that short stretch of road will reach not less than $5,000,000.

The Atkinson Tilting Window

An exhibit of the Atkinson Tilting Window is to be made at the State fair in Sacramento. This window has been pronounced the best and cheapest tilting window on the market. It is less expensive and the owners claim far more practicable than the Dean window. Several big contracts have lately been signed. The window is extremely simple and as a labor-saving device and danger preventative it has no equal. The San Francisco office is at 430 Monadnock building.

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The broom, after all, has been a senseless sort of institution, stirring up the dust, which had lain peaceably and unobtrusively in out of the way places, and inciting it to violent and riotous action. Clouds of dust were swirled through the air only to fall again upon carpet, curtains and furniture, and then be flirted uncertainly about again by the duster brandished in the wake of the broom.

Instead of this irrational method of attempting to be void of dust and dirt, a more reasonable and more effective one has been discovered and is in reality coming to be used.

In one of the newest apartment houses in the East, it is said that there will be no need of a broom from cellar to garret. Every suite is equipped with an apparatus by which dirt and dust may be gathered up by suction and sent through a rubber hose and a pipe to the basement. Almost everyone is familiar with the working of the vacuum system of cleaning, but it is surely a matter of some interest to note that this method is gradually being adopted to general use. In another generation sweeping and dusting may have become a forgotten exercise.

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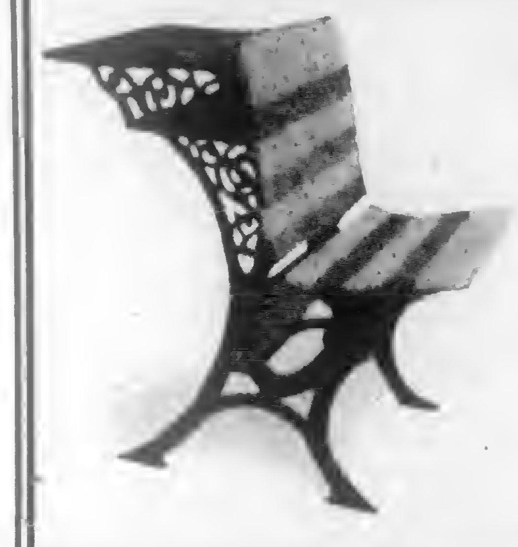
Hirsch & Kaiser, of 1757 Fillmore street, San Francisco, have recently issued a model catalogue, and one that should be in the hands of every photographer on the Pacific Coast. It is handsomely printed, fully illustrated, and covers everything in the way of desirable photographic supplies at present obtainable. The firm has such a large business and has so many special lines which it carries exclusively, that a catalogue of their goods at this date is sure to be a book of the greatest value to any one wishing to be informed on the newest and best that is obtainable. The opportunity to secure such a handsome catalogue of such completeness, particularly of goods so abundant in variety, is not often presented.



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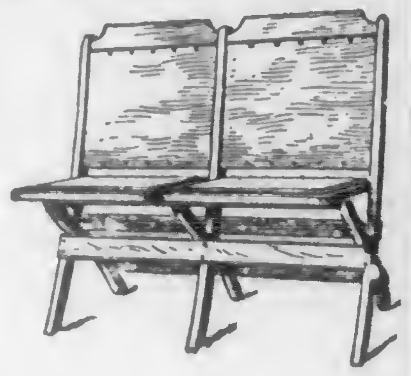

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Mr. Jurgewitz's success may be largely attributed to the excellence of his work. He has a thorough knowledge of the trade and he never undertakes a job without first guaranteeing satisfaction. Architects who have employed him say his work is first class which accounts for so many of them retaining his services without thought of change. Mr. Jurgewitz possesses an artistic temperament that is in evidence in his work.

Among the contracts which he has lately completed are the Masonic Temple in Berkeley, Columbia Theater, Oakland; fire house, Oakland; Hotel Avalon, Masonic Temple, Santa Rosa; and the Dunn, Woolsey and Glasscock residences, Oakland.

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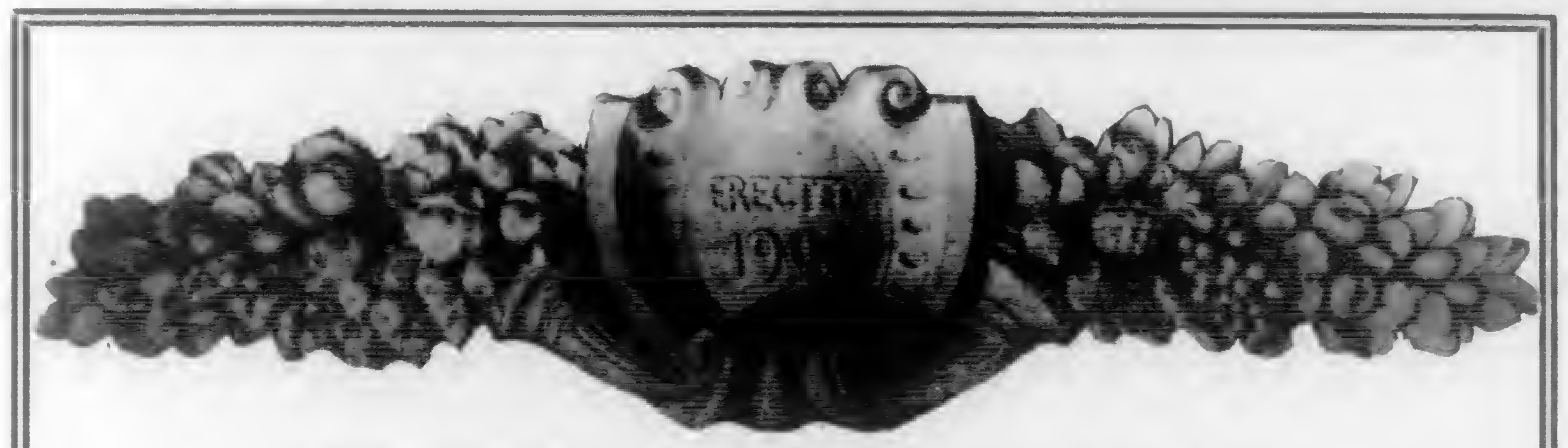

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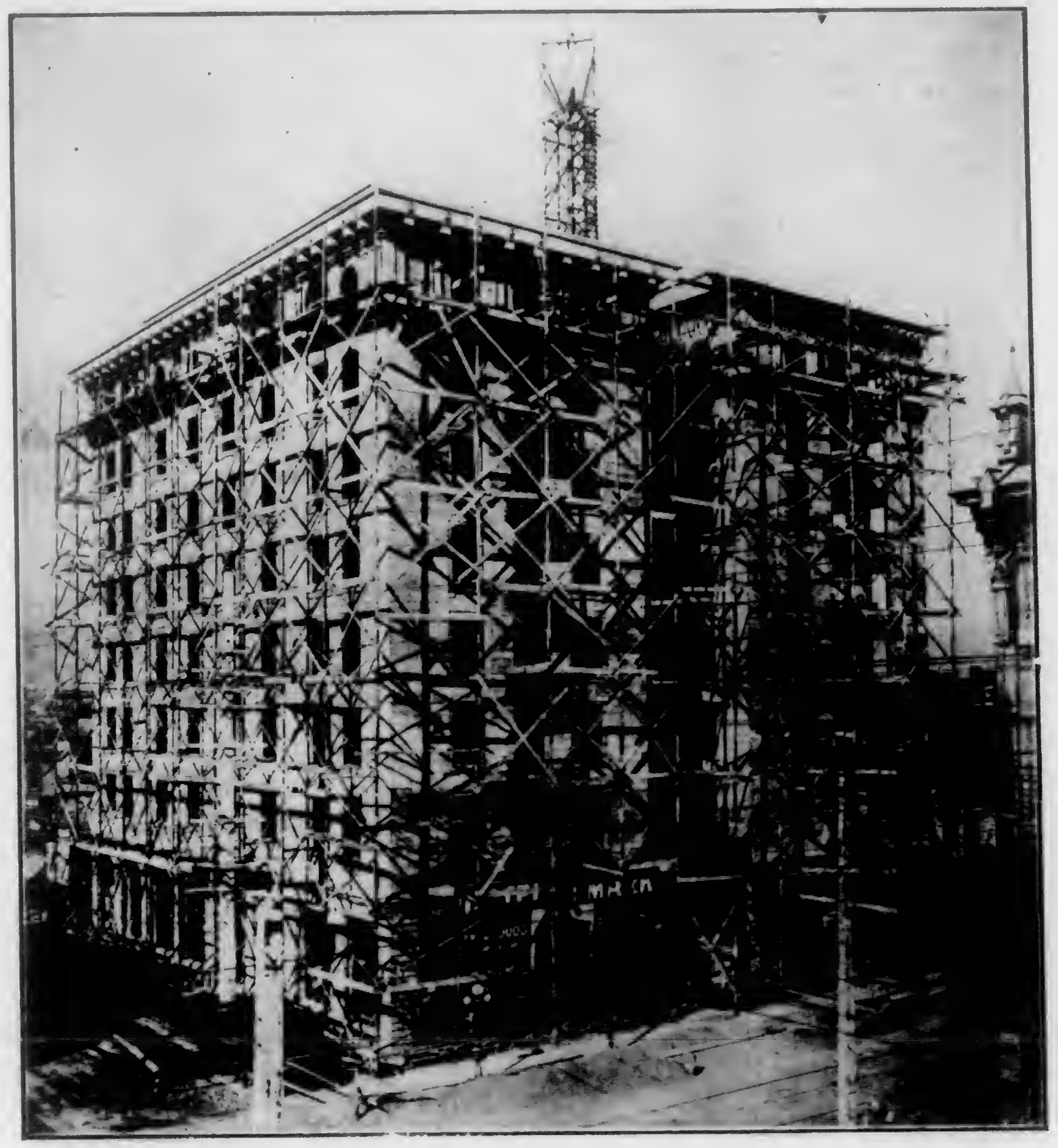

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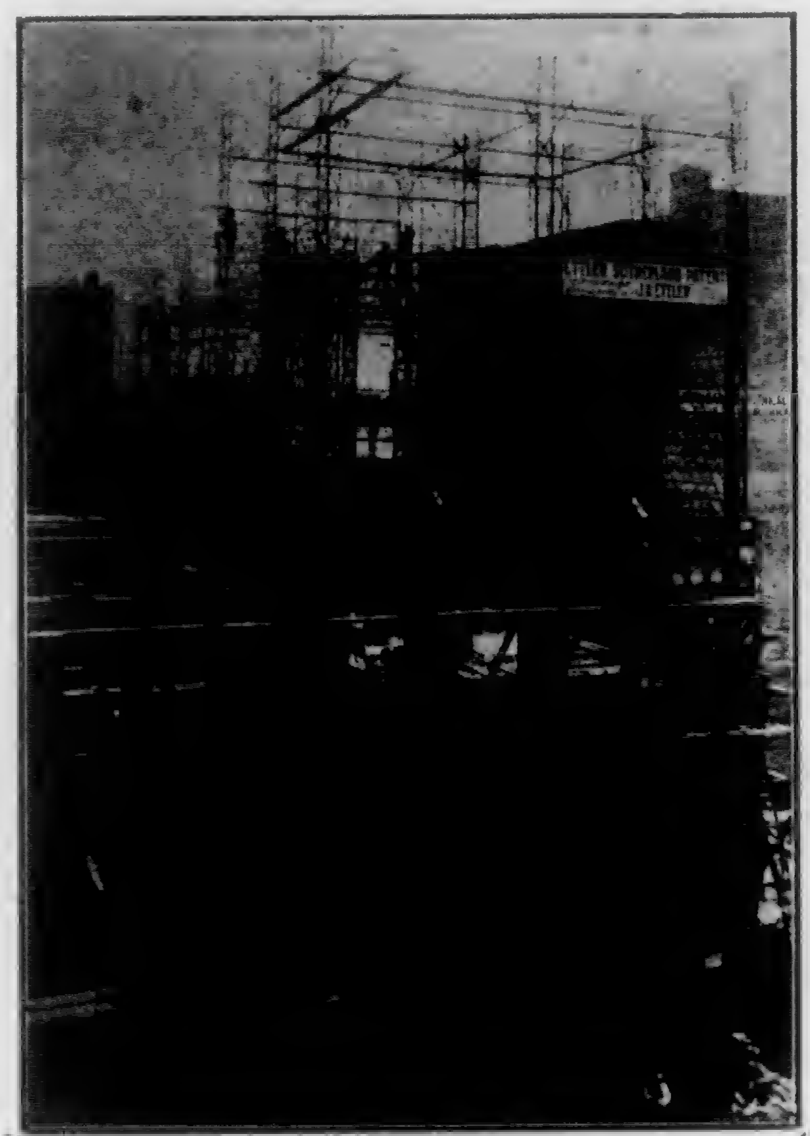

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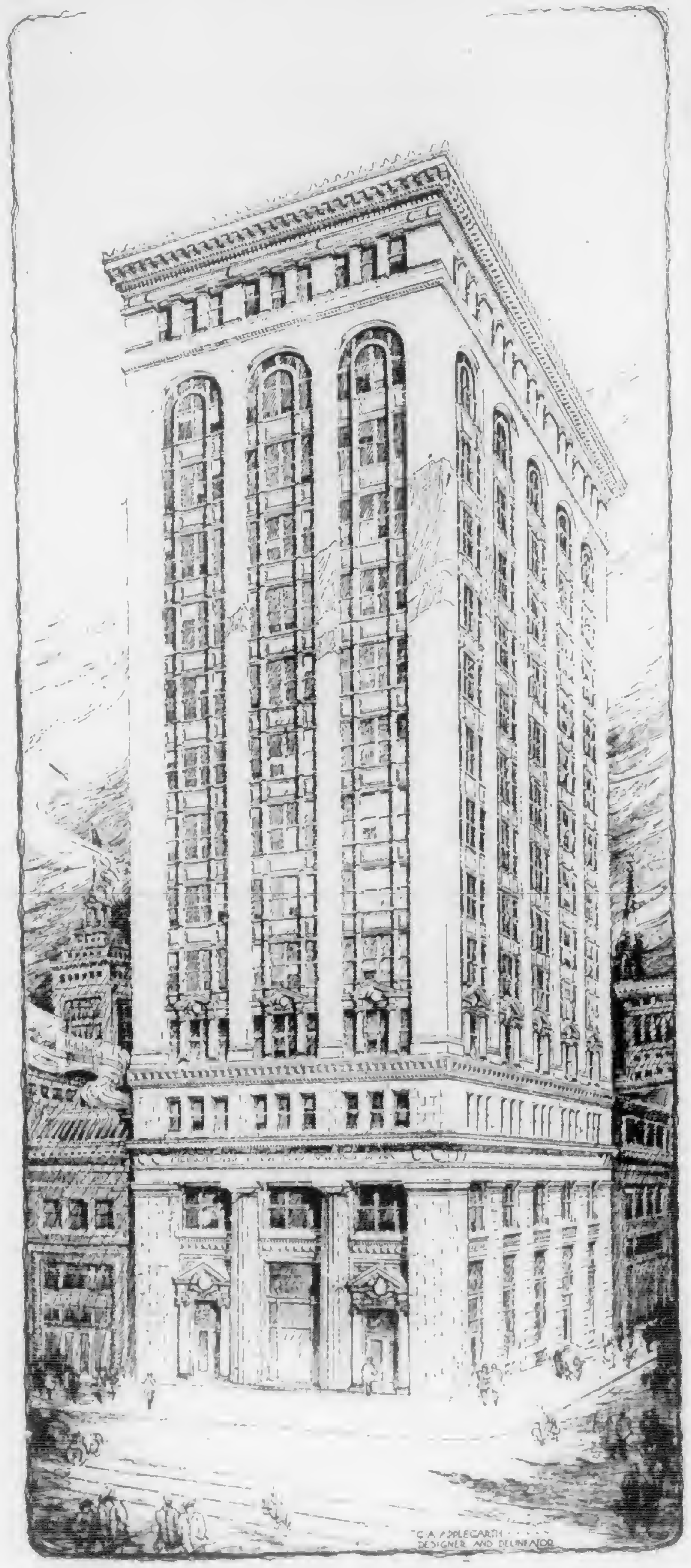

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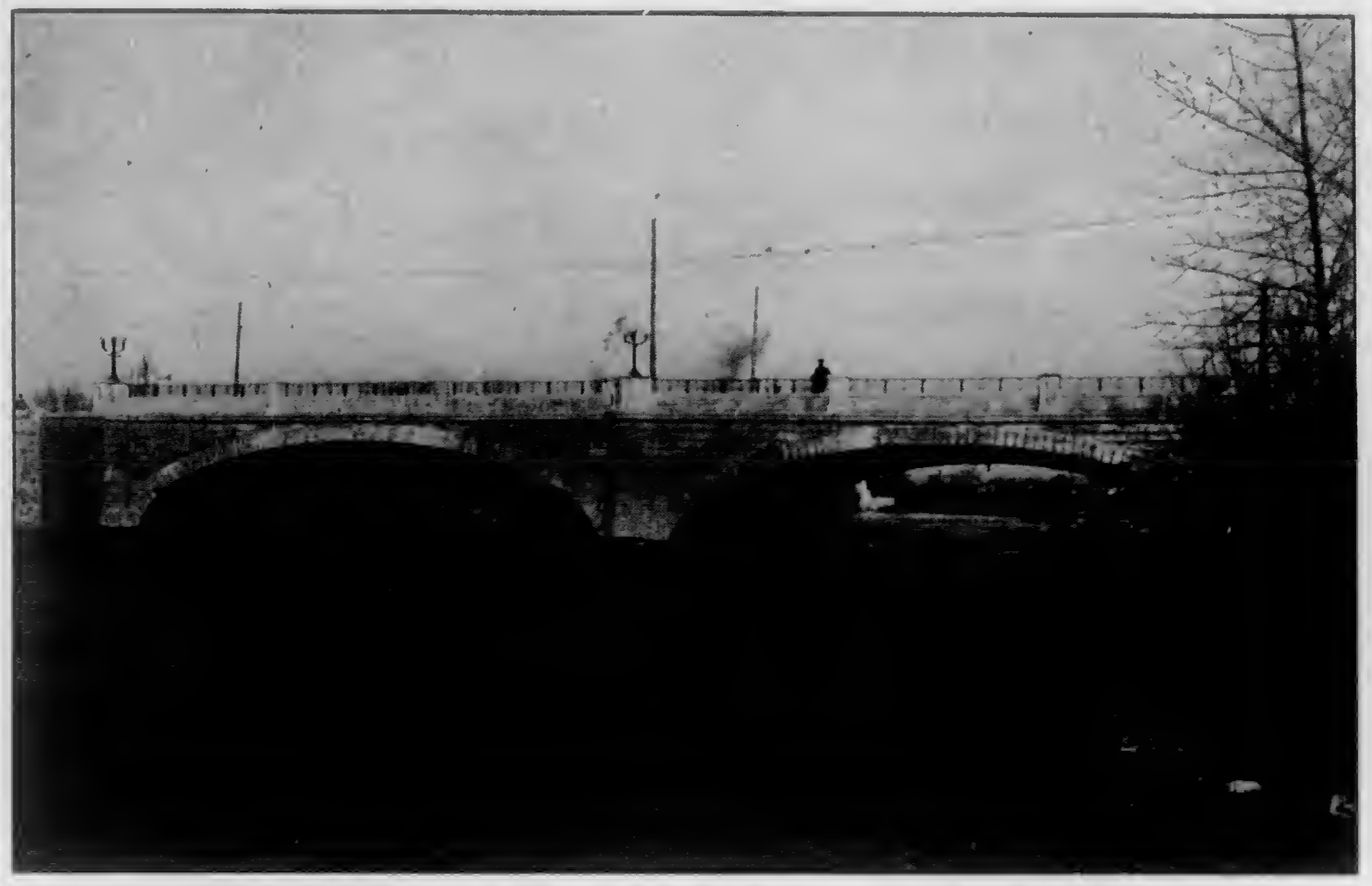

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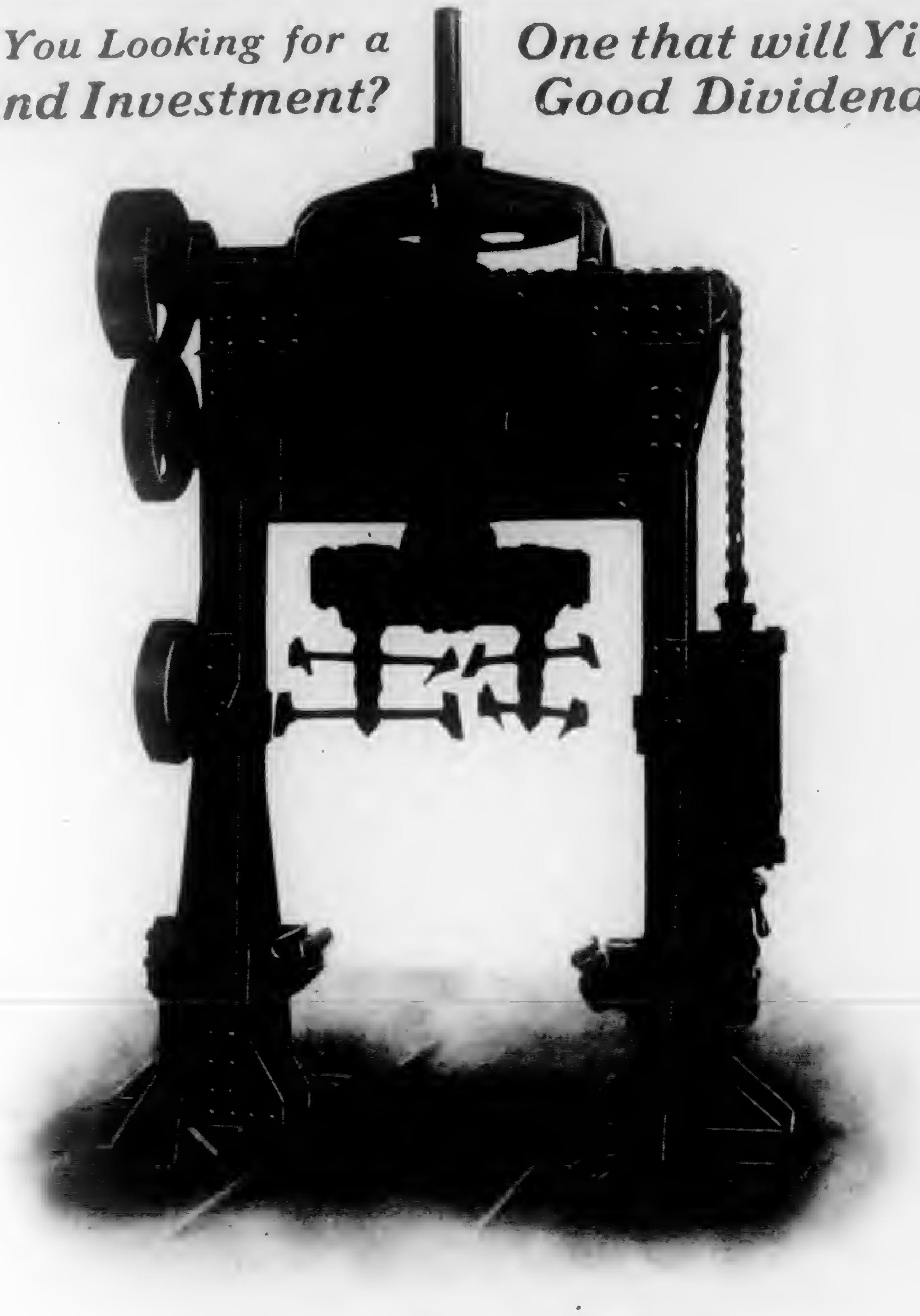

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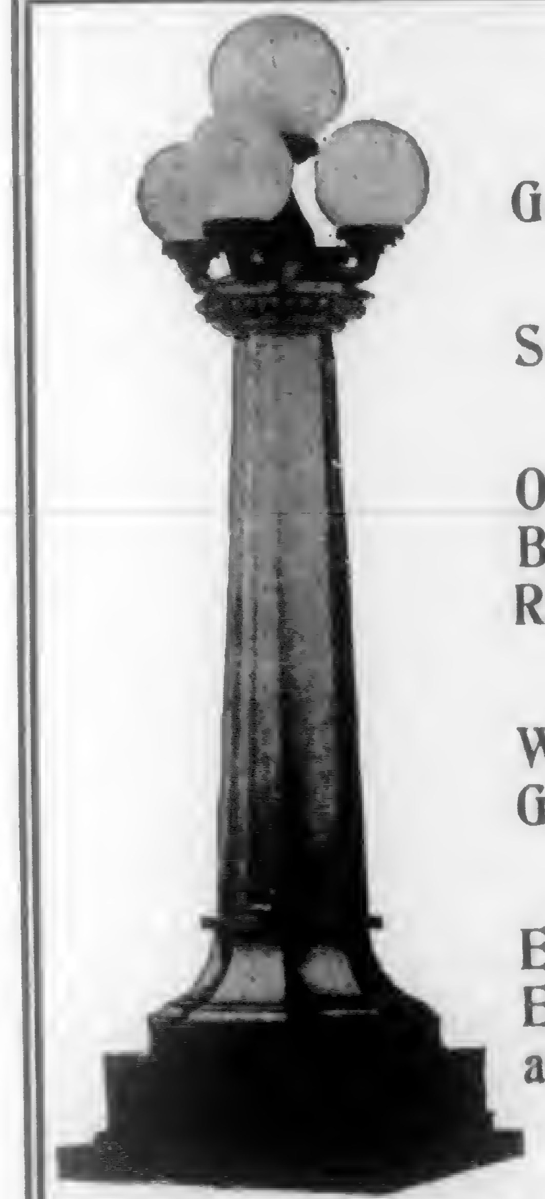

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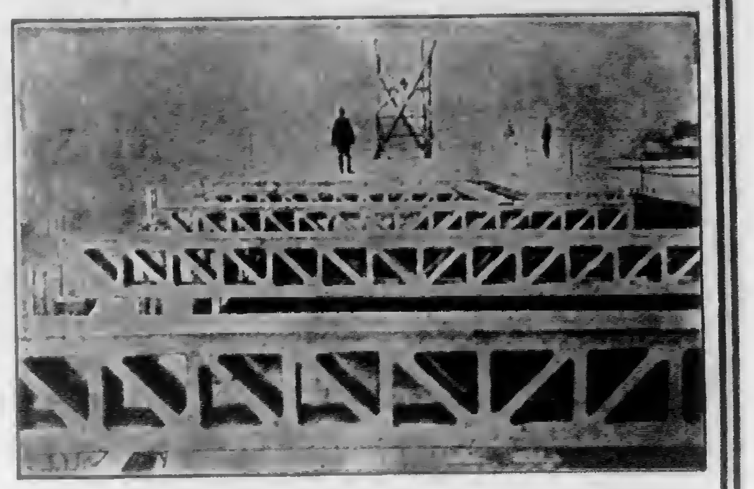

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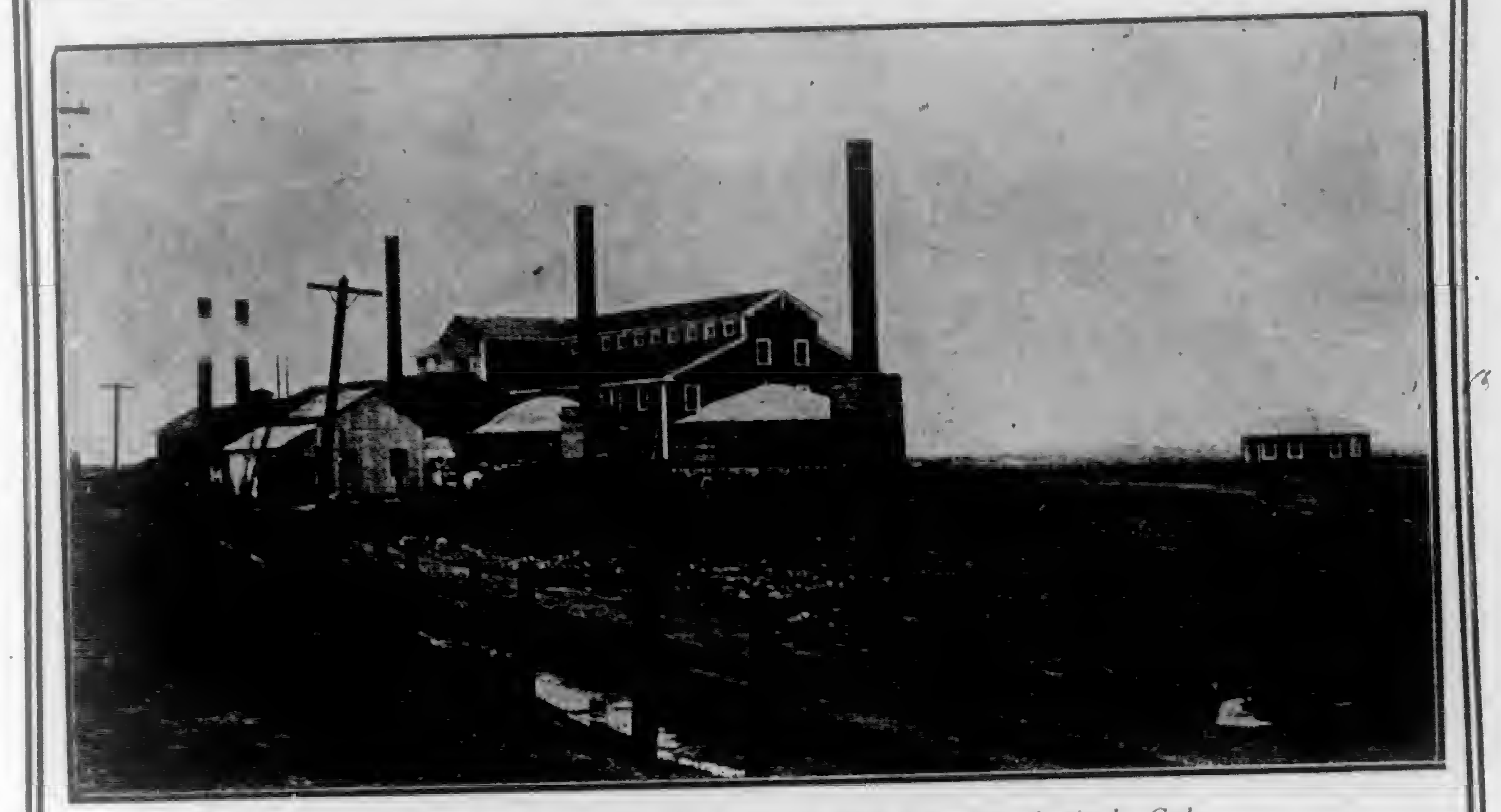

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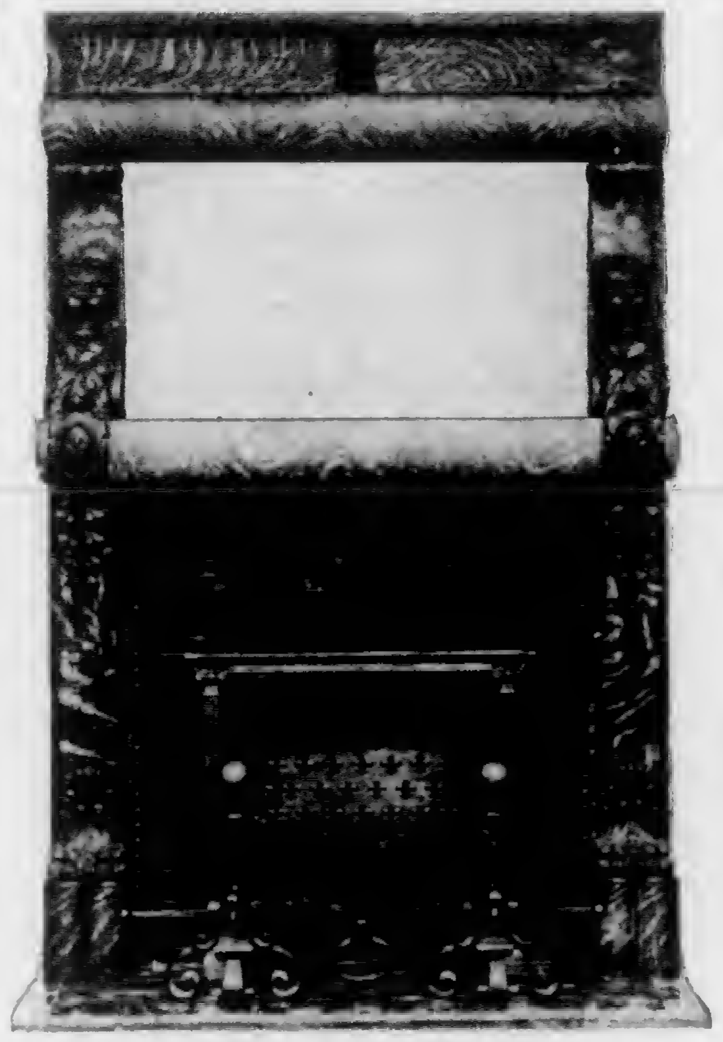

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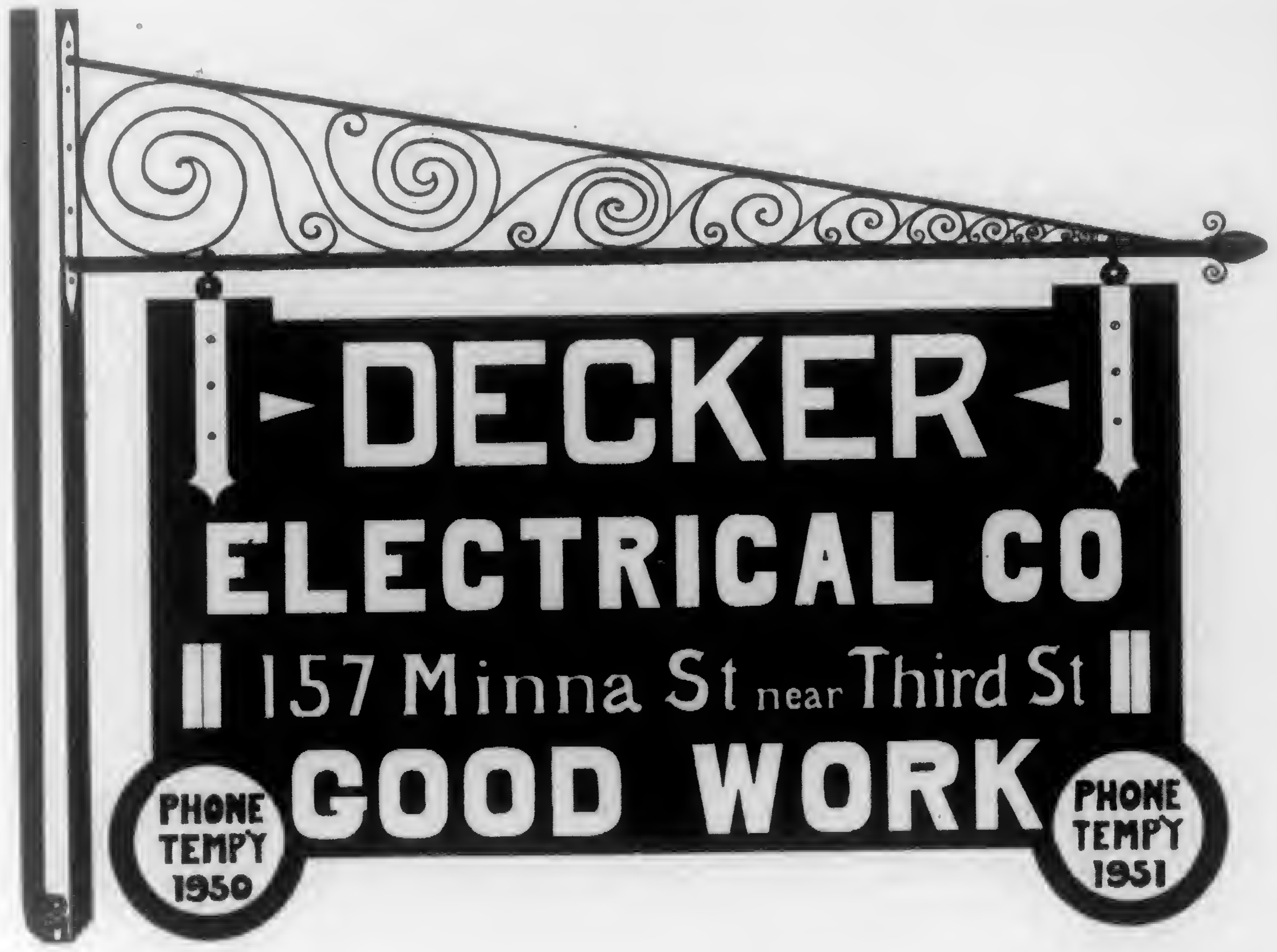

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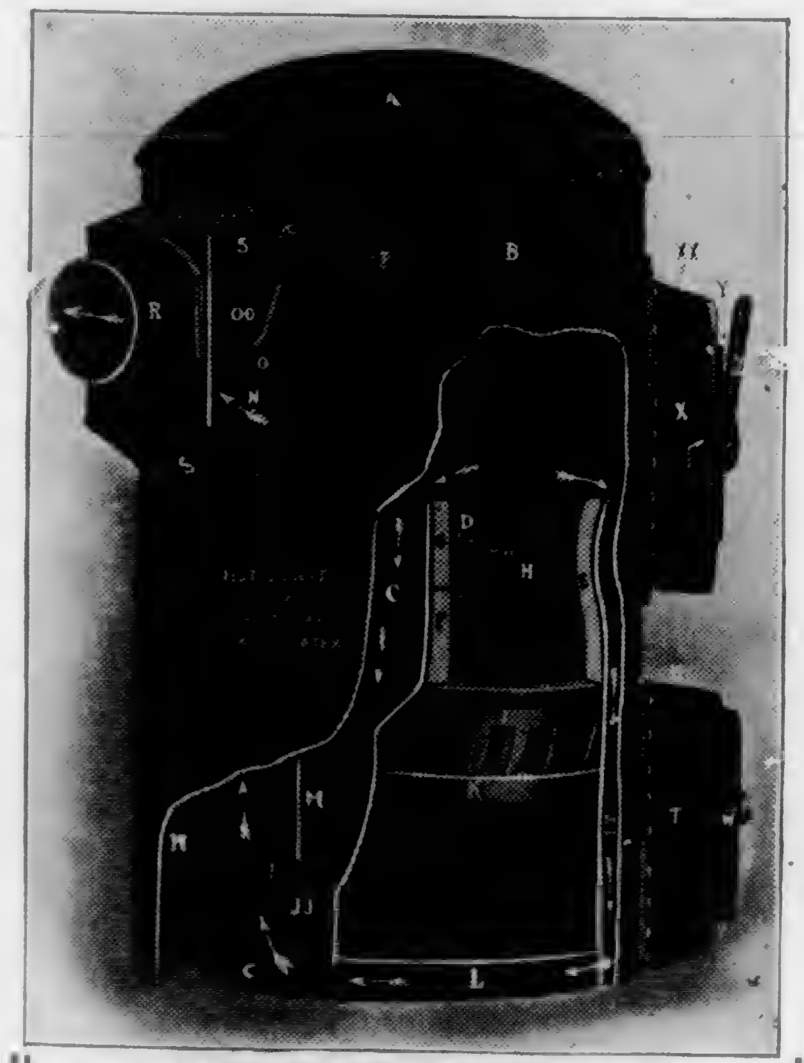

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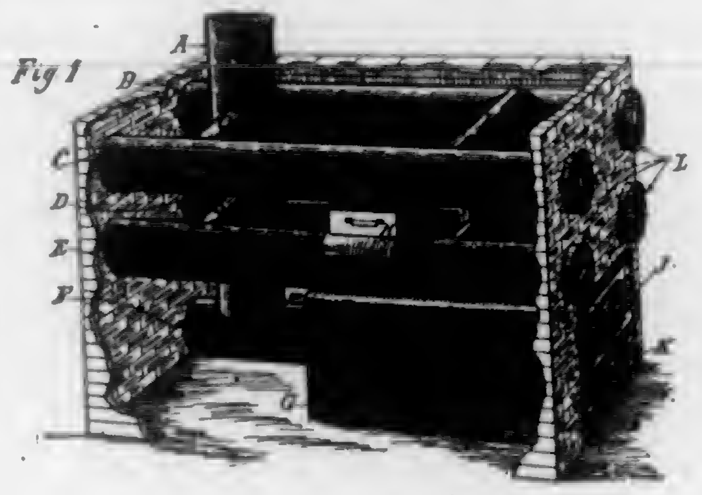

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Van Emon Elevator Company Not Affected

To the Editor of the Architect and Engineer:

Sir,—You have probably noticed in the daily press that the Otis Elevator Company has obtained a favorable decision in its patent suit against B. C. Van Emon. Many of our customers and friends have concluded from this publication that the Otis Elevator Company had finally succeeded in its effort to put its only formidable local competitor, the Van Emon Elevator Company, Inc., out of the passenger elevator business and that the Elevator Trust had obtained a monopoly of the elevator business. Such is not the case.

This decision of the Circuit Court vs. B. C. Van Emon and in favor of the Otis Elevator Company is a personal matter affecting Mr. B. C. Van Emon but not the Van Emon Elevator Company, Inc., which has not been sued by the Otis Elevator Company. However, the Van Emon Elevator Company feels an explanation is necessary because the public is slow to distinguish the important legal difference between the man, Van Emon, and the corporation bearing his name. The Van Emon Elevator Company, Inc., is no more restrained by this decision against B. C. Van Emon than is the A. B. See Company of New York, (the largest competitors the Otis Elevator Trust has in the Eastern States), the Westinghouse Electric & Manufacturing Company of Pittsburg (which manufactures and catalogues an "electro-magnetic control" elevator car switch, identical with the Otis control), the Cutler-Hammer Company (manufacturers of similar elevator car switches), the Schureman Company of Chicago (manufacturers of "electro-magnetic control" elevator car switches) and several other big corporations that have been manufacturing and selling this apparatus for years on the advice of their patent attorneys,—"that the Otis 'Baxter patent' (for an electric switch in the elevator car controlling an electric motor with a constant current system) was worthless, because antedated by the 'Paine' patent (already expired); and because the modern electric system uses a 'constant potential current', which will not operate the Baxter System of Elevator Control."

The Baxter Patent expires next March in any event, and in the interval the attorneys for Mr. Van Emon have applied for a "rehearing" before Judge Whitson, (which application acts as a stay of the whole proceedings). They have also filed an appeal from his decision that will come before the United States Circuit Court of Appeals some time this summer, or early in the fall. Mr. Van Emon and his attorneys feel positive that the appeal will be successful, and that the Baxter Patent will be declared invalid.

Meantime the Van Emon Elevator Company, Inc., will continue to contract for and install elevators with electro-magnetic control, believing that the device is no more patentable (considering its universal and common use for the past twenty years) than a common electric key switch in a lamp socket, or a push button for a call bell.

The Van Emon Elevator Company, Inc., also stands ready to protect with an indemnity bond all purchasers of its magnet control passenger elevators against any litigation commenced by the Otis Elevator Company. Such protection is not required in contracts specifying rope control, and mechanical lever control of elevator cars which are not influenced by the Court's decision. Notwithstanding this fact the agents of the Otis Company have also (in spite of the United States Government's prohibition vs. the employment of such "Trust methods") threatened users of this apparatus.

The lawsuit of the Otis Elevator Trust against B. C. Van Emon was commenced five years ago as a spite suit to harass a dangerous rival and drive him out of business. For several years the Otis Elevator Company delayed the suit's adjudication and kept it (with its menace of legal proceedings vs. purchasers) hanging over the heads of architects, contractors and owners to compel them to pay an exorbitant price for Otis elevators.

Legal action was confined to B. C. Van Emon because the Otis Company did not own his business and could not control his bids. It did own Cahill & Hall, McNicol and other local concerns and bid collusively with them (to the great injury and loss of San Francisco owners) until enjoined by the United States Government suit of April, 1906. It was only when the so-called "Baxter" patent had about eight months to run, that it seemed an "everything to gain and nothing to lose" policy, to argue the case and chance an unfavorable decision.

Believing that we have made the position of the Van Emon Elevator Company, Inc., plain to you as outlined in the premises, and believing we can count on your loyal support in our fight against this Twenty Million Dollar Elevator Trust that manufactures its apparatus and distributes its wages in New York, Chicago, Illinois, and Philadelphia, Pa., and pays its dividends to Eastern stockholders, we remain, very truly yours, Van Emon Elevator Company, per H. B. Rathbone, Secretary and Treasurer.

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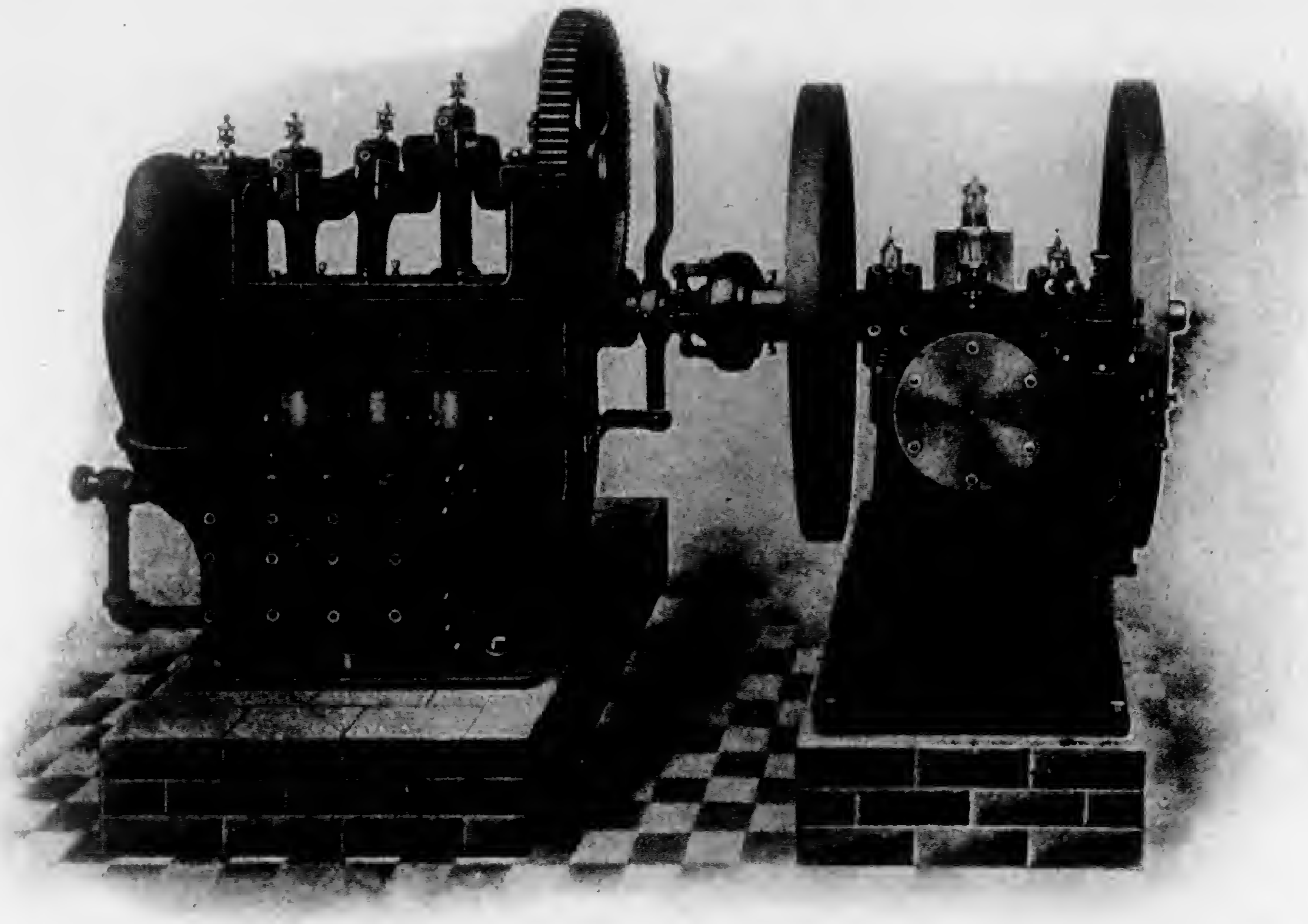

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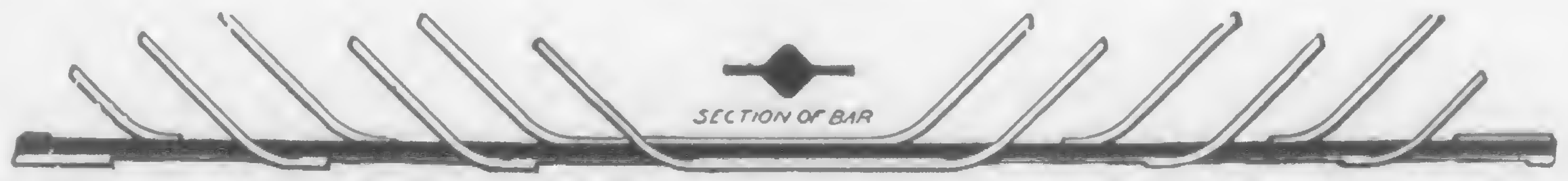

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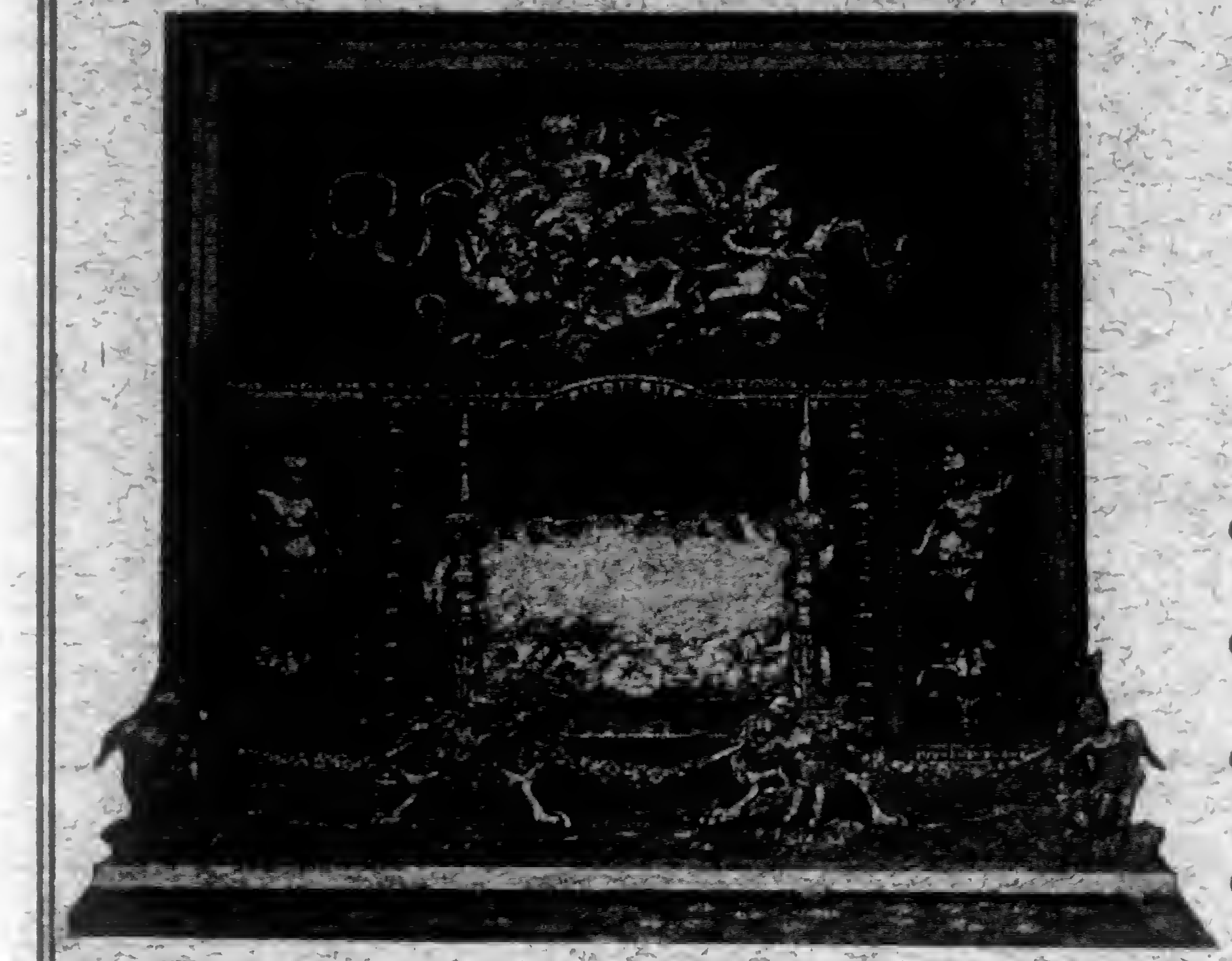

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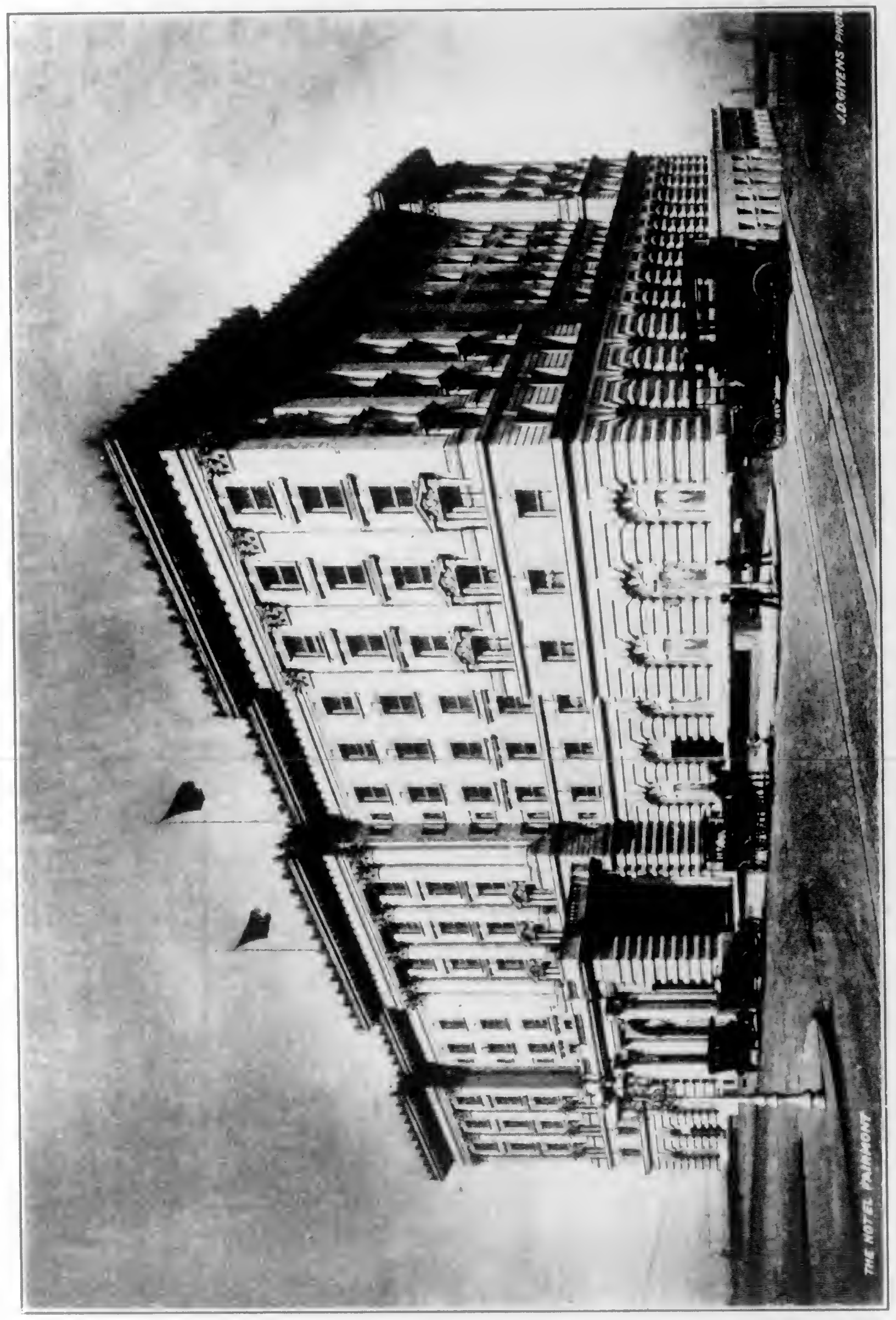


THE FAIRMONT HOTEL, SAN FRANCISCO

First Photograph to be Published Since the Actual Completion of the Building *Reid Bros., Architects*

Frontispiece, The Architect and Engineer of California, September, 1907

THE

Architect and Engineer

Of California

VOL. X. SEPTEMBER, 1907. No. 2.

Architecture

Some Wholesome Criticism that Should Benefit the Profession

By F. W. FITZPATRICK, Architect

THESE may be but the idle thoughts of an idle fellow. If any one makes the charge, I will plead "guilty." It is summer, vacation-time, and I am rather pleased to have this little idle while, and the idea of having time to think, idly or otherwise, instead of having to act and quickly, is indeed refreshing. My surroundings are beautiful, peaceful and the temptation is to merely enjoy. Any profound thinking would be irksome; certainly any pessimistic thoughts would be.

Without the slightest trace of pessimism therefore, but merely the resultant thoughts from a little quiet introspect, retrospect, prompted by probably more reading in the last few days than I have had time for in a year prior, suggests the question "What is Architecture today?" The direct cause of that question is a letter I have just received enclosing two clippings from recent issues of the New York Press. One reads:

"They Made Literature."

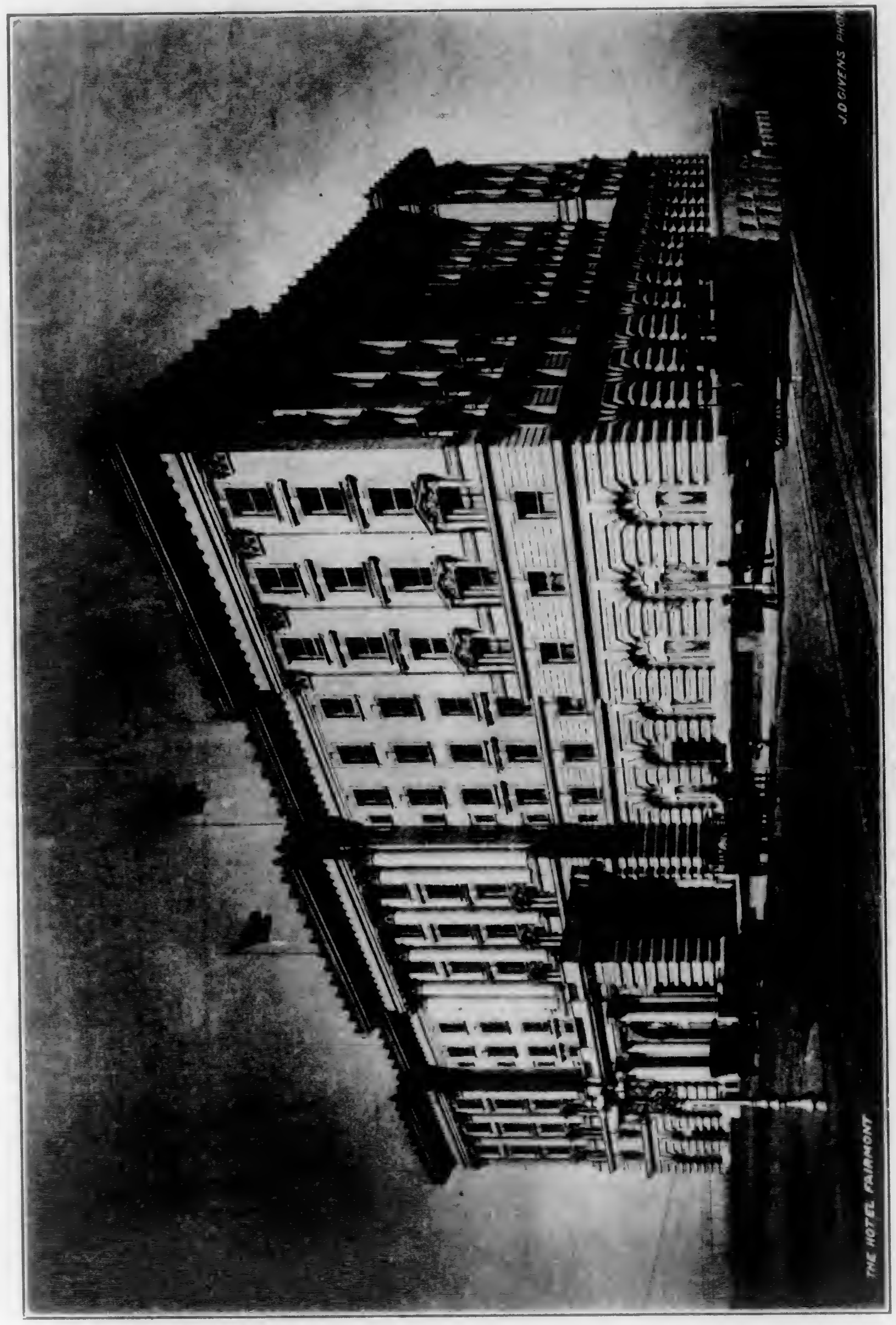
"The architect—and his still more important colleague, the stone cutter—wrote their ambition into stately piles, their soaring fancy into daring, flying buttresses, their grim humor into grinning gargoyles, their romanticism into flowery cornices and vine-twined pillars. Architecture then was literature writ in marble. But in these latter times the architect is the lackey of wealth. He bends above his drawing board, not for fame, but for gain. What might have remained through the ages the noblest of arts has been prostituted to the aggrandizement of the commercially successful and the hereditarily fortunate. Art? Bah, greed in granite."

The other:

"Architectural Fame."

"Let us be frank in these respects. The modern architect as an uplifter of mankind is a distinct failure. He has reached the point where the best that his marvelous mind can produce is a mere shell for elevator shafts, with offices glued to the sides, of a monstrous mausoleum as the home of a public collection or an abode for Midas. For him the years of Midas, surmounted by the cap and bells. Away with tomyrot as to White's civic value! His memory must rest upon his character as a man, for though he may have been the country's greatest architect, there is not in that distinction enough to lift him above the ranks of a myriad others who wear the livery of the dollar-builders."

Thus comments a daily paper. Think of it! For seemingly aeons of time the public press has paid scant if any attention to architecture, and that little not over-intelligent or discriminating. Even our architectural



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Thus comments a daily paper. Think of it! For seemingly aeons of time the public press has paid scant if any attention to architecture, and that little not over-intelligent or discriminating. Even our architectural press has little to say in the way of wholesome criticism, its critiques are usually fulsome praise where the latter will do the most good. Adverse criticism of the designs or methods of our practitioners, particularly those of our leaders, is painfully infrequent. That press is usually servile and whistles dutifully when the great ones of our craft indicate by the merest nod that it is time to whistle.

Remove healthy criticism, the sharpest goad to our best endeavors and what do you have left? Mediocrity.

The introspect, retrospect and general examination I alluded to at first, not tinged with any pessimism, or indigestion, but just a calm review of what all of us have done these many years, compels the admission, in perfect frankness, that our art today is indeed mediocre. Nay, it is no longer an art. And what have we in its stead. A business? A profession?

Let us examine into the matter. It will not be lost time.

Our civilization and our acquirements are complex, exacting. Ninety-nine hundredths of our enterprises, our businesses, our pleasurable pursuits require a building of some sort or other for their purpose, their most prominent and tangible expression. We are justified, therefore, in classing the art, or whatever it is, of building as one of the most important functions of modern man.

We Americans have achieved high distinction in the performance of some of those functions. Our growth and the pace we have kept in life are amazing; in some lines of commerce, in engineering, in developing natural resources, we have taken a place well in the lead of nations and occupy a relative position that no other people, in any other time, has ever attained. But what have we done in Architecture?

Perfection in that art or business should mean that a building, first and foremost, should accomplish all the purpose for which it is built; that the designer should take advantage, and accentuate, and bring to his assistance all the peculiarities of the site. His building should fully express the purpose for which it is constructed, it should not borrow an expression from some remote and unrelated, perhaps prehistoric structure; it should be indestructibly built, yet not wasteful of its owner's resources; it should be beautiful. Can you, my brother architects, find—outside of your own achievements, of course — more buildings of our eleven million some hundred thousand, than that you can count on the fingers of one hand, that will approach anywhere near the ideal at which we have glanced? And to concede that that is true must certainly be a confession of mediocrity.

Go into almost any building you wish, note the purpose of that structure, see what is being done in it, and you will be pained to find how ill planned it is. I am speaking now of the work of the average, the general run of our professional brethren. The exceptions to that average, the "top notchers," so to speak, may certainly be counted on the fingers of the other hand and we will glance at their work later on. But look at this factory, for instance, it is ill placed upon the ground, no consideration has been given the best points for light and ventilation. To add anything to it you must needs re-study the whole problem; no thought has been given to the future: the operation of the machinery has not been made easy; the construction is costly and the maintenance almost more expensive than needs be; the materials used entail additional useless expenditure; no regard has been had to prevent the spread of fire and you are surprised that an architect could so ill acquit himself of his task. Why is it that a business man, endowed sometimes with more than ordinary intelligence, will confide so many of his interests, so much of his hard-earned capital, into the hands of so incompetent an adviser?

But where would he go for a better one?

Then visit yonder house with me. It is a costly home, resplendent with art glass and all the frivolities, the gew-gaws, of our so-called "domestic architecture." It is a country home, but the plan is that of a city house, its very best exposure is devoted to stairs, lavatories, etc.; its rooms open up most awkwardly; the beautiful open stairs make the spread of fire certain; every time one room is swept you can be sure the entire house is dirtied, and one cannot sneeze on any story without being heard perfectly all over the house; it is so well arranged and built with such materials that you are certain that dropping a match anywhere will result in the complete destruction of the home. But then it resembles Mr. So-and-So's house, and has cost much more money than the surrounding houses, and the sapience of the architect is conceded. The people have gotten what they wanted and they did not want anything better because they didn't know better, architects have not taught them better.

Our average architect has not made the best use of the available advantages of his project. Therefore is he not a startling success as a factor in our economic development.

Perhaps then is he an essentially clever constructor?

We have evolved the "skyscraper," as engineers we have developed a system of steel construction that is daring and does contribute to at least the crowding, if not the solving, of our economic problems; true, too, no other nation has devised the conveniences as perfect heating, ventilating and other mechanical appliances as have we, but in the real science of construction, which presupposes permanency, economy and adaptability, have we progressed one iota beyond what our fathers did, are we not absolute slaves to the precedents established by them? Or, if we do depart from those time-hallowed methods of wooden framing and the other etceteras, are we not carried off our feet by every passing fad? By dint of hard hammering, some of us have come to realize that it really is an advantage to build so that our buildings may not fall a ready prey to flames, and most of us have been pulled hither and thither by pretty nearly everyone with a "system."

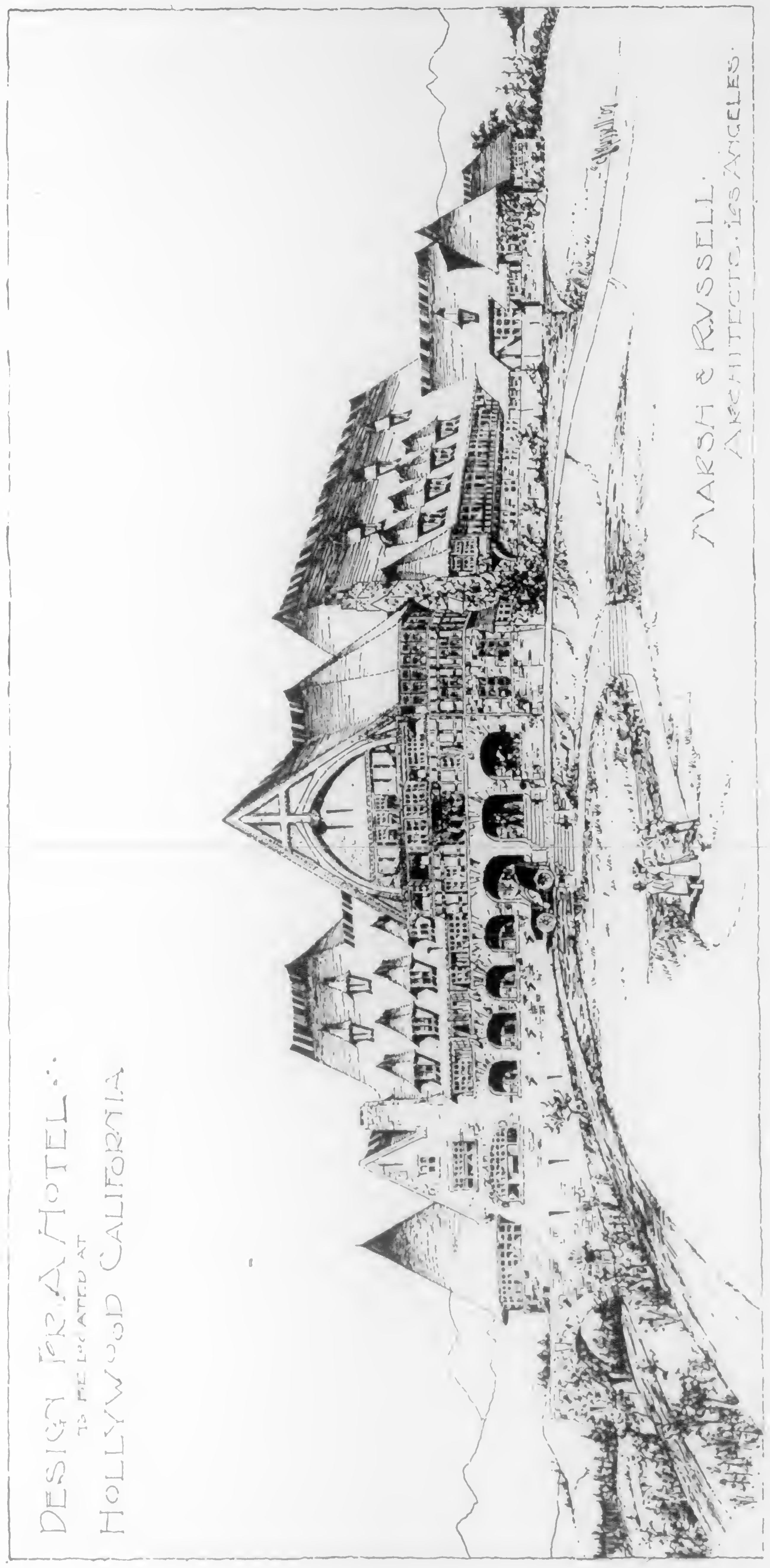
What think you of the man who leaves steelwork exposed in the hope that fire will not affect it, or of the one who leaves reinforced concrete exposed to possible fire, unprotected, a material, however structurally strong it may be initially, and however advantageous it may be to use it structurally, that loses fifty per cent of its efficiency in 750 degrees of heat?

Speaking of intelligence, see what that of the San Francisco brethren assured to their city. They built so well that $315,000,000 of those buildings went up in smoke. The fire entails a loss in business to the city and to the country of at least a billion dollars more. Twelve million dollars will have to be spent to clean away the debris, and $350,000,000 and twenty years time will have to be expended to put the city where it formerly stood in the scale of cities. When we realize how much money was spent in San Francisco in tawdry ornament and useless decoration, we are forced to admit that the San Francisco fire is a severe arraignment of and cause for and commentary upon our knowledge of building.

That fire exposed astounding stupidity; there is almost as much in every other city, only it has not been uncovered—yet.

But perhaps if we are not constructors we are artists?

How can we be such if our buildings do not fully and completely express the purpose for which they were constructed; or, if they are not frank


DESIGN FOR A HOTEL TO BE LOCATED AT HOLLYWOOD CALIFORNIA
MARSH & RUSSELL ARCHITECTS, LOS ANGELES

in design; or if the key is forced, or if we merely copy something that was very beautiful ages ago and that frankly served the purpose of those times, but that is as out of place today, incongruous in our new surroundings, as it would be ridiculous to clothe our Senators in a modern top-hat, purple-bordered toga, knee panties, white spats and Roman sandals?

In how many of our buildings have we not sinned, sinned grievously in one or all of the ways above enumerated?

What are our best New York commercial buildings? Tall shafts purporting to be very substantial masses, granite walls, in reality useless weights of walls, carried, suspended in some cases bird-cage fashion, from the real steel supports. Atop of the shafts are perched Greek temples, becolumned and porticoed and entablatured, all according to Hoyle—or Vignola—and the whole be-carved and decorated most sumptuously, extravagantly. What paucity of expression! Is that Art?

Leaving the average for a moment, what have the great ones of our nation done? Take the best work of McKim, Mead & White, for instance. As a rule it is beautifully executed and the details pleasing, even the masses are attractive if we could but isolate the particular building under consideration, or imagine it in entirely different surroundings. What rhyme or reason is there in abjectly copying, in every dot and dash, a Venetian palace of ancient vintage to do duty in a busy modern metropolis as a newspaper office, or to as painfully copy the baths of Caracalla, or some other sybaritic old Roman, in the most modern of modern buildings, a great railway station? With our limitations it is most natural that we should adapt even ancient forms and details, to be original is almost fatal, but can we not modify those forms, adjust them to our needs, get out of them a semblance of present purposes at least, mix them up a bit, resort to almost any expedient rather than bodily transplantation? Were I in those gentlemen's place, as successful, judged by worldly gauge, and as honest as I would like to be, I declare I would look up the direct heirs of Bramante, Buonarroti, Ictinus of Athens, and even the reputed descendants of the catachrestical Callimachus, in order to divide up with them the commissions derived from the use of their forbears' perhaps copyrighted designs.

Or the Burnham aggregation of talent? Estimable gentlemen, eminently successful, but how artistic? True, their buildings are unusually well planned, constructed rapidly, and probably as well, if not better, than those of any of their confreres. But, artistically, their scheme, while possibly not copies, is painfully the same all over the country. Good, wholesome sort of buildings, their very plainness disarming adverse criticism, but from all the same stock pattern. The First National Bank in Chicago, the Railway Exchange, the Wanamaker's in New York, the Burnham buildings anywhere, I can spot within a mile of them. One of their buildings, however, deserves unstinted praise, to my mind at least, and that is the new railway station in Washington. It, too, is from some one's bath or some antediluvian temple, I forget now just what is its prototype, but there is reason for it. The Capitol is of the classic mold; this new building is a complement to it, part of a general scheme of classic design, really a great gateway to the city, treated monumentally and with monumental surroundings, appropriate, pleasing, eminently suitable. But with the general run of their work, one is always reminded, somehow or other, of yards of paper, a printing press and a pair of scissors.

Perhaps of them all, Sullivan of Chicago approaches the nearest to the ideal handling of our "art" in some respects. His designs are absolutely frank, there is no bluff at false construction, the external walls merely clothe the building, they indicate the way they are carried up and sustained and make no pretense of doing the sustaining. Then his decoration is applied to salient points and is simply and solely decoration. His ornament, detail, is most successful, really beautiful and, in times gone by, he gave us some very attractive masses, though of late his buildings, in so far as the composition of masses is concerned, are woefully boxy. But he is on the right track and a very considerable school is following him.

There is another school, chiefly youngsters, who attempt to do wonders with the "Nouveau Art" craze. Their efforts are generally puny, are hardly worth notice and so manifestly mere "echoes de Paris" that they defeat the very purpose for which that art was originated.

And still others who ape the mannerisms, the very faults of the lordly Richardson—long since gathered to his fathers; peace to his ashes—and affect to ignore utilities, the very prime purpose of a building, and live merely to "design" pleasing exteriors, that seldom if ever fit either the surroundings or the buildings they enclose. He, the master, had really a most attractive disregard for everything save design, forgetting that the latter is but a part of a whole and not the one and only thing. If a window would look well in a certain place outside Richardson would put it there, if you had to climb up a step-ladder to look out of it, or if you had to make a room three feet wider than you intended in order to get that window in, why, that was your fault. If he thought that another building would look well with a moat in front of it, he would put the moat there, on that twenty-five foot lot, and slam your building back far enough to accommodate that moat; that other people carried their buildings 'way in front of you was your affair, you should have bought up all the adjacent property. He had his moat in that design, and we have a lot of apelings trying to follow in his steps.

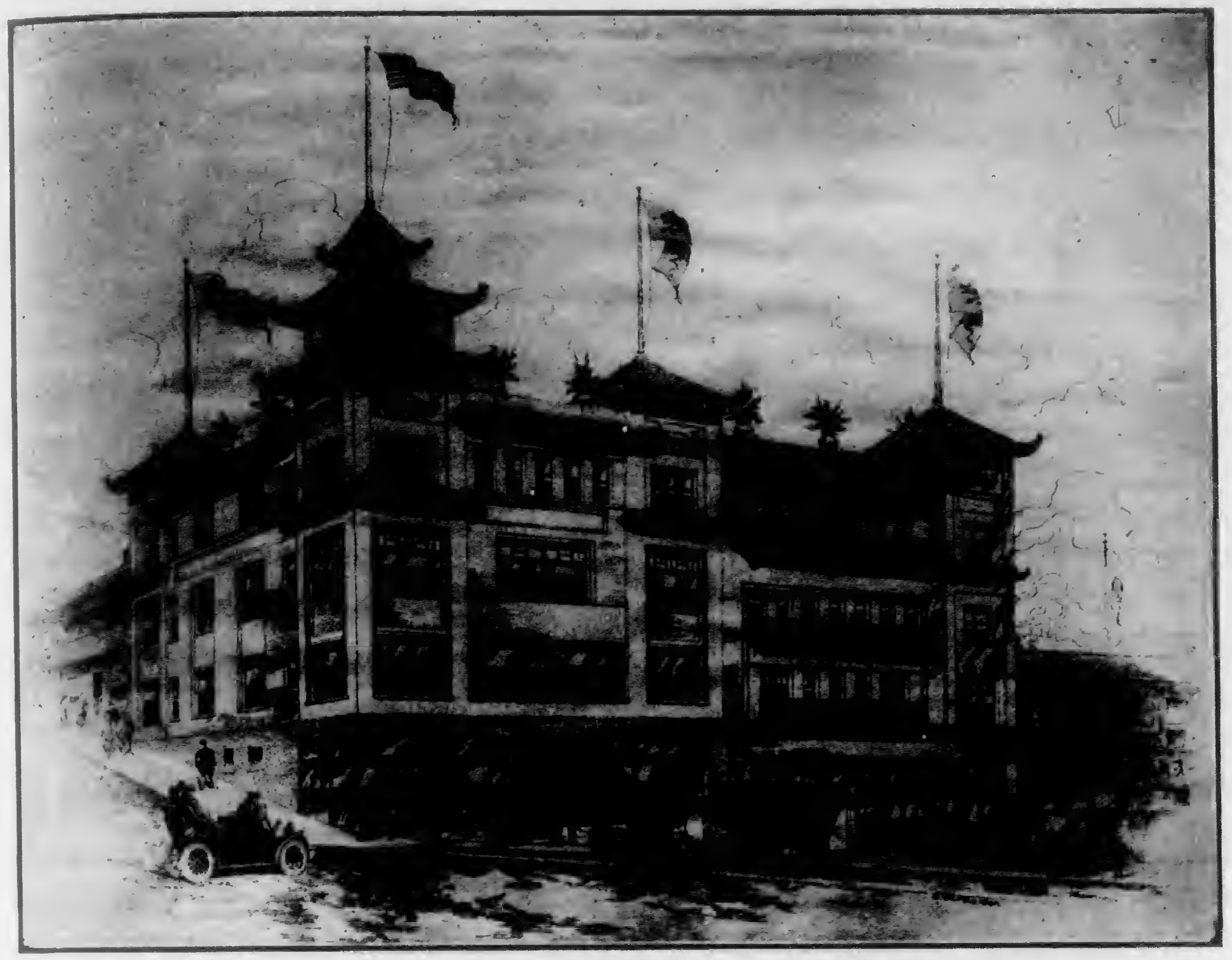
We have also had those enthusiastic but misguided souls who have striven to establish an American style, but they are in heaven.

No, as artists, in the fullest sense of the term, we are not distinct successes.

But perhaps the art or the profession or whatever it used to be has developed into a business. What success have we made of it in that line? Some of us have married well or else secured railroad and bank presidents as blood relatives; some of us have assiduously cultivated the social set, and others of us have dallied in real estate or otherwise turned a handsome penny, for there are some of us who are wealthy. But taken as a class, the craft is ill paid, most of it is soured and embittered by lack of success. The most insignificant layman who has an unimportant building to erect will get us to compete and otherwise demean ourselves like a lot of peanut venders. In how much respect is the craft held? The average man speaks of a lawyer or a doctor as of Somebody to be consulted, to be deferred to; the architect he expects to find respectfully awaiting him at his back door—and he usually does find him there. The big building companies control the heavier construction absolutely; the retaining of an architect has become a mere farce and his duties are perfunctory. In but a little while these companies will go a step farther and employ their own "designers." The architect used to be a sort of monarch of all he surveyed upon a building, as sacred his authority as a captain's on his ship. Today he is glad to draw his five per cent or oftener his three per cent and to respectfully suggest this or that change on a building to the under-officers of the great construction companies.

As a business we have not made a notable success.

What are we, whither are we tending? We know whence we came. We are of an ancient and honorable guild, that once held its head high among its peers, that was respected, esteemed, that counted really great artists and great constructors on its rolls. But that is of the past. The question before us is as to the future. An interesting subject to think upon, anent which to speculate, but hardly fit for one to write about in idle minutes. Retrospect and introspect are well enough, and (though you may think these tainted with pessimism) pleasing, too, but when it comes to prophesy as well as the pointing out of the dangers, ah, that is another matter.



Sing Chong Building, Chinatown, San Francisco
A. W. Burgren, Engineer *Equipped with Otis Elevators* *T. Patterson Ross, Architect*

Dwelling upon our artistic sins, our subservience to dollars, our everlasting copying tendencies, I am reminded of Wallace Irwin's clever skit on the Clark mansion in New York. There is a wealth of truth in his catchy, rollicking rhymes, and let us use them as our peroration. To quote even a peroration is certainly the privilege of an idle fellow:

"Senator Copper of Tonopah Ditch
Made a clean billion in minin' and sich,
Hiked for Noo York, where his money he blew
Buildin' a palace on Fift' Avenoo.
'How,' sez the Senator, 'can I look proudest?
Build me a house that'll holler the loudest—
None o' yer slab-sided, plain mausoleums—
Give me the treasures of art and museums;
  Build it new fangled,
  Scalloped and angled,
Fine, like a weddin' cake garnished with pills;
  Gents, do your dooty—
  Trot out yer beauty,
Give me my money's worth—I'll pay the bills.'

"Forty-eight architects came to consult,
Drawin' up plans for a splendid result;
If the old Senator wanted to pay,
They'd give 'im art with a capital A.
Every style from the Greeks to the Hindoos,
Dago front porches and Siamese windows,
Japanese cupolas fightin' with Russian,
Walls Senegambian, Turkish and Prussian;
    Pillars Ionic,
    Eaves Babylonic,
Doors cut in scallops, resemblin' a shell;
    Roof wuz Egyptian,
    Gables caniptian,
Whole grand effect, when completed, wuz—hell!

"When them there architects finished in style,
Forty-nine sculptors waltzed into the pile,
Swingin' their chisels in circles and lines,
Carvin' the stonework in fancy designs;
Some favored animals—tigers and snakes;
Some favored cookery—doughnuts and cakes,
Till the whole mansion wuz crusted with orn'ments,
Cellar to garret with hammam adornments—
    Lettuce and onions,
    Cupids and bunions,
Fowls o' the air and the fish o' the deep,
    Mermaids and dragons,
    Horses and wagons—
Isn't no wonder the neighbors can't sleep!

"Senator Copper, with pard'nable pride,
Showed the grand house where he planned to abide:
Full of emotion, he scarcely could speak;
'Can't find its like in Noo York—it's uneek;
See the variety, size and alignment,
Showin' the owner has wealth and refinement,
Showin' he's one o' the tonier classes—
Who can help seein' my house when he passes?
    Windows that stare at you,
    Statoos that swear at you,
Steeples and weather-vanes pointin' aloof;
    Nuthin' can beat it—
    Just to complete it
Guess I'll stick gold-leaf all over the roof.'"

* * *

Keep Him

If you have a man in your employ that is a little slow—slower than you like—but he does his work well, is always looking after your interests, doing his work methodically, picking up and caring for little things, careful that his time is occupied in your service, does not object if he works a little over time, if any emergency arises, in fact approves of it—never grumbles at his task, but does it with care, whatever is set apart to him—never encourages the insubordination of others, but rather discourages it, keep him. You might get a better man, but ten to one you will get a worse one when all the little things are taken into account.—Clayworker.

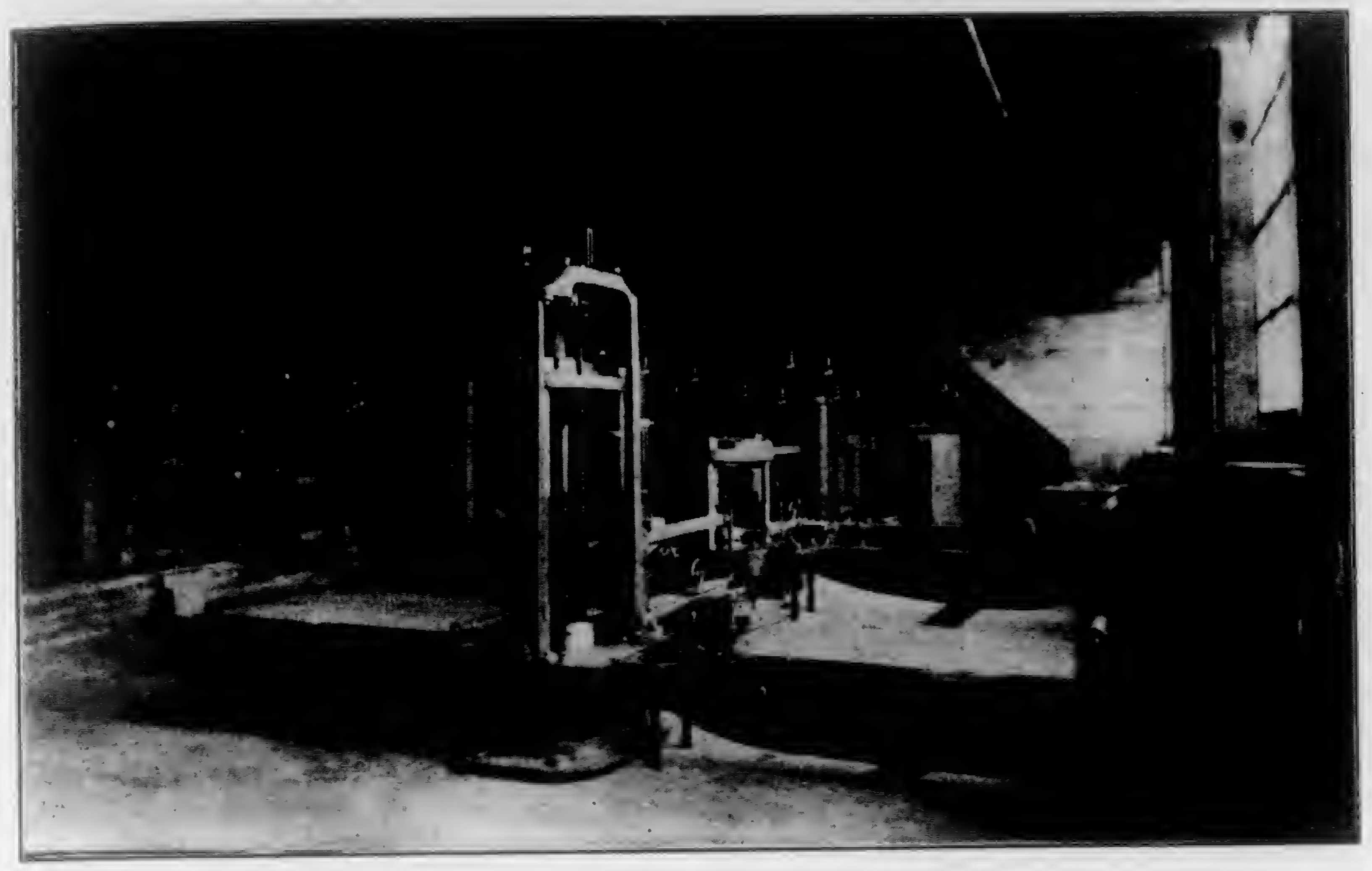


Fig. 1. Three Concrete-Beam Testing Machines

Investigations of Structural Materials by the United States Geological Survey

By RICHARD S. HUMPHREY,

Engineer in charge of the Structural Materials Division
United States Geological Survey

WITH the problems arising from the growing scarcity and consequent increase in the price of wood, principally lumber used in building construction, the search for a desirable substitute becomes a matter of prime importance and justifies the work now being done by the United States Geological Survey at its structural materials testing laboratories at St. Louis.

The increased use of concrete in many forms during the past few years, especially for building purposes, has created a great demand for information regarding the structural value of this material. For a number of years limited investigations designed to obtain this information have been carried on by a number of investigators throughout the country, but no serious attempt at co-operation in this work had been made until a few years ago, when the United States Geological Survey, recognizing the need of information and co-operation, procured a small appropriation for making tests of structural material and invited various technical societies to take part in the work.

A committee called the Joint Committee on Concrete and Reinforced Concrete was invited to assist in outlining the work at the laboratories. This committee is composed of members of the American Society of Civil Engineers, the American Society for Testing Materials, the American Railway Engineering and Maintenance of Way Association and the Association of American Portland Cement Manufacturers. The leading professors of engineering from almost all of the large colleges in the country are members of this committee, and they exercise general supervision over the work.

An Advisory Board composed of leading engineers throughout the country was at once created and has had general supervision of the work.

Tests are being carried on to determine the value of different sands, stones, and other materials used in the manufacture of concrete. The material is shipped from all parts of the country by geologists connected with the work and a complete record of the material is sent in by them. At the laboratories this material is made into mortar and concrete by using the different percentages ordinarily employed in practical work and following as closely as possible practical conditions.

In addition to the study of the constituent materials of mortars and concretes, structures of various kinds similar to those used in buildings are made and tested.

The equipment of the laboratories at St. Louis for carrying on this work is very complete. In addition to all needed smaller apparatus there are four testing machines of 200,000 pound capacity and one of 100,000 pound capacity, suitable for testing beams and other structures used in buildings. These machines will test beams up to twenty feet in length and are equipped to make tests of the different materials used in construction work. Three of these machines used in the beam division are shown in Fig. 1.

In addition to the above machines a very large machine, having a working capacity of 600,000 pounds, will in a few weeks be installed at the laboratories at St. Louis. As far as known at this time there is only one other machine in the United States similar to this. This machine will make it possible to test columns, beams, and in fact all the different kinds of construction material now used. It will test very large reinforced concrete girders up to spans thirty feet in length and concrete columns up to thirty feet in length.

The value of such tests as these is readily apparent, since their results can be applied directly to practical work. A very serious objection to the use of results obtained in tests made by private investigators is due to the fact that the tests were applied only to small specimens not nearly approaching in size the parts or pieces used in actual construction. Heretofore it has been necessary to consult the results of these small tests in order to have some basis for design, but it is now clearly recognized that the best results can be obtained only from tests made on members as large as possible, or at least on pieces as large as those ordinarily used in structural work.

All the concrete used at the laboratories is mixed in three Chicago cube concrete mixers, each of which is mounted on skids, geared to a motor and equipped with charging hopper. One of these mixers has a capacity of one cubic yard and the others will contain one-third cubic yard each. After the concrete is mixed it is carefully tamped in molds to form the different pieces on which the tests are made, such as cylinders, cubes, and beams.

The laboratory also uses five hollow concrete block machines, used for making concrete blocks similar to those used in actual construction, and the several different divisions,—the constituent materials division, the beam division, the concrete block division, the permeability, the shear and tension and the chemical division are equipped with all apparatus necessary for conducting their tests.

Although reinforced concrete is used to a remarkable extent at the present time, and both concrete and reinforced concrete construction is becoming more and more popular every day, it is evident to anyone familiar with construction work that these materials will be more generally employed within the next few years. Many engineers are prejudiced against the use of concrete and reinforced concrete, but this prejudice is rapidly

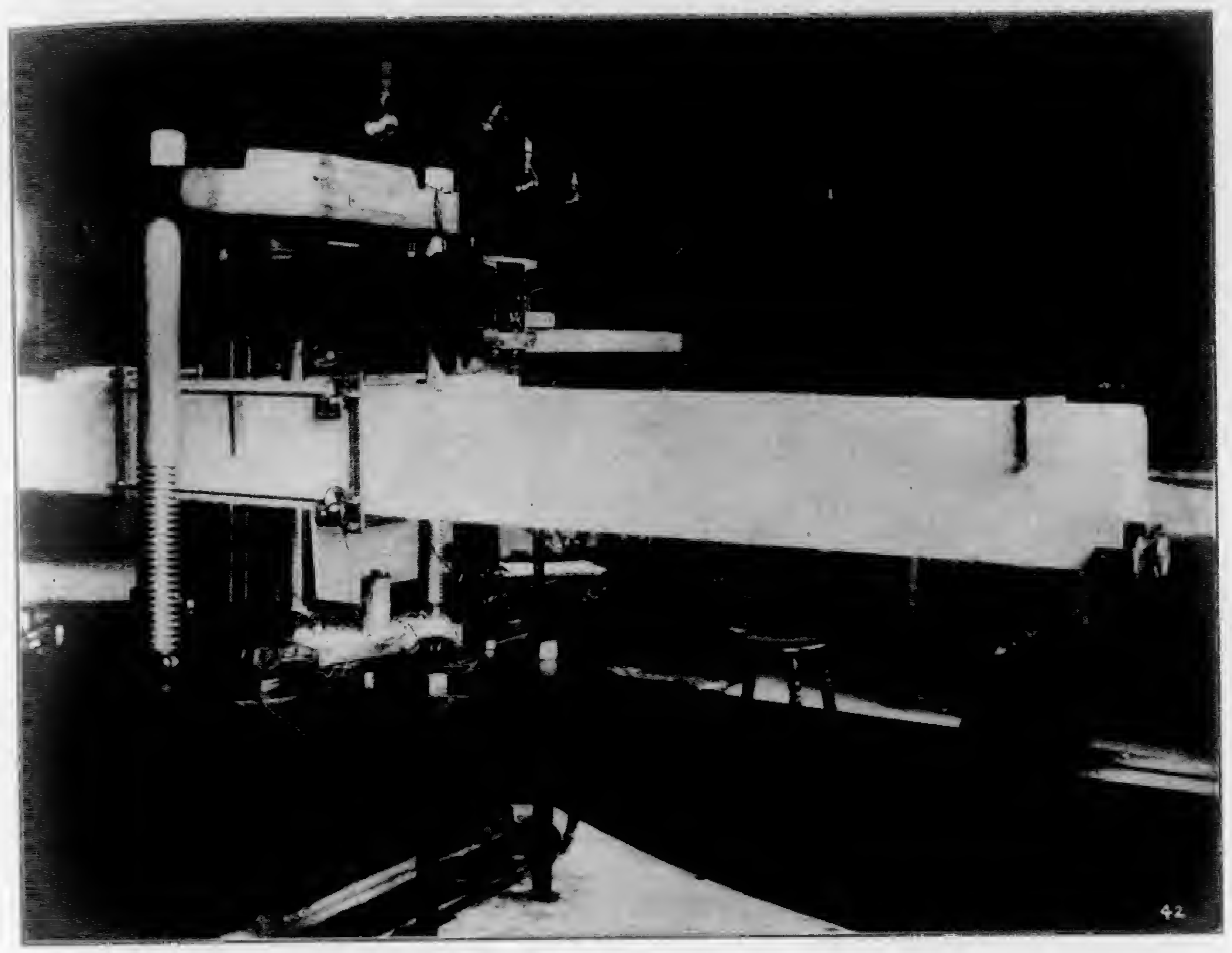


Fig. 2. Testing a Thirty-Foot Concrete Beam

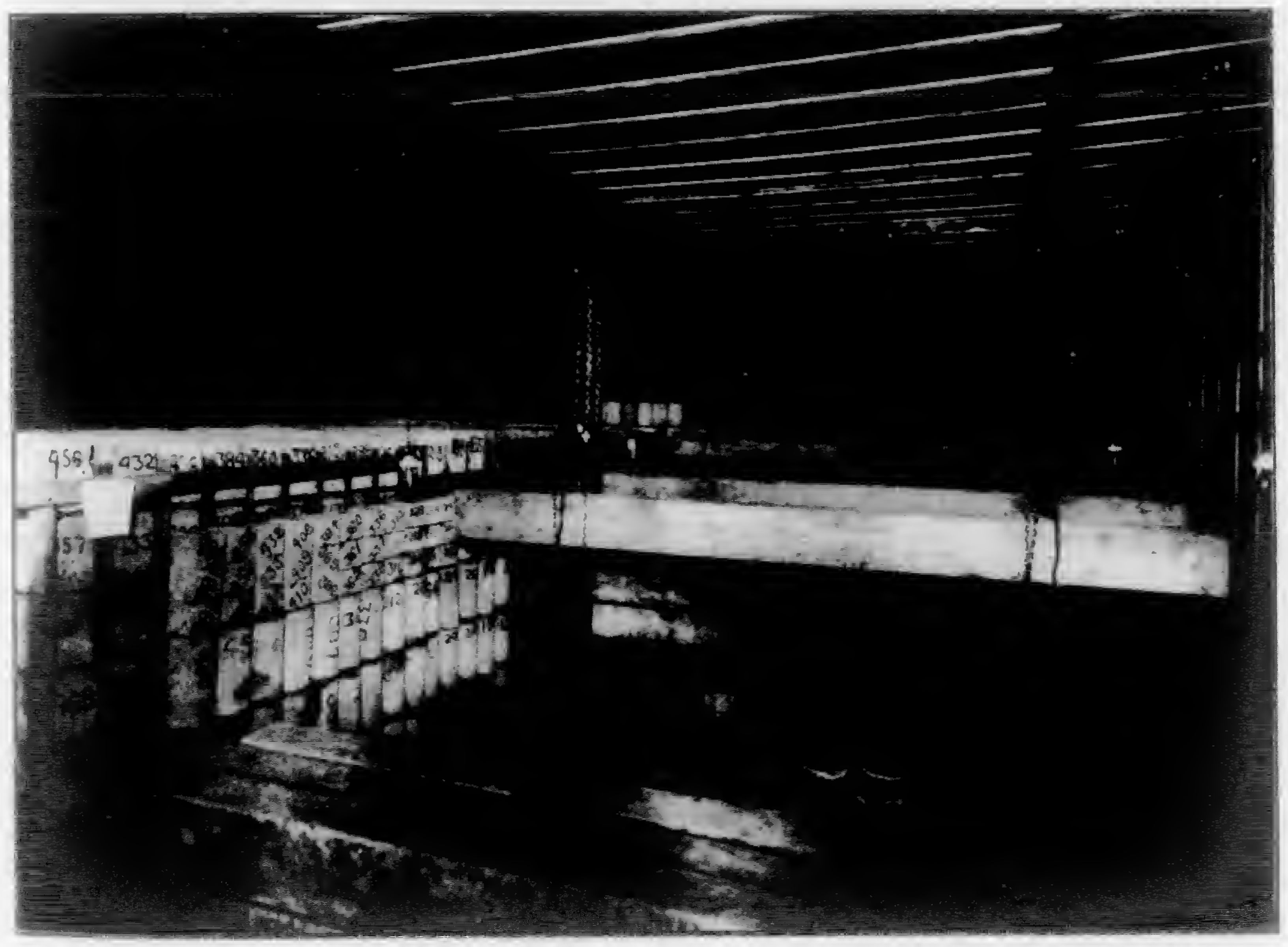


Fig. 3. Room in Which Concrete Beams are stored

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The equipment of the laboratories at St. Louis for carrying on this work is very complete. In addition to all needed smaller apparatus there are four testing machines of 200,000 pound capacity and one of 100,000 pound capacity, suitable for testing beams and other structures used in buildings. These machines will test beams up to twenty feet in length and are equipped to make tests of the different materials used in construction work. Three of these machines used in the beam division are shown in Fig. 1.

In addition to the above machines a very large machine, having a working capacity of 600,000 pounds, will in a few weeks be installed at the laboratories at St. Louis. As far as known at this time there is only one other machine in the United States similar to this. This machine will make it possible to test columns, beams, and in fact all the different kinds of construction material now used. It will test very large reinforced concrete girders up to spans thirty feet in length and concrete columns up to thirty feet in length.

The value of such tests as these is readily apparent, since their results can be applied directly to practical work. A very serious objection to the use of results obtained in tests made by private investigators is due to the fact that the tests were applied only to small specimens not nearly approaching in size the parts or pieces used in actual construction. Heretofore it has been necessary to consult the results of these small tests in order to have some basis for design, but it is now clearly recognized that the best results can be obtained only from tests made on members as large as possible, or at least on pieces as large as those ordinarily used in structural work.

All the concrete used at the laboratories is mixed in three Chicago cube concrete mixers, each of which is mounted on skids, geared to a motor and equipped with charging hopper. One of these mixers has a capacity of one cubic yard and the others will contain one-third cubic yard each. After the concrete is mixed it is carefully tamped in molds to form the different pieces on which the tests are made, such as cylinders, cubes, and beams.

The laboratory also uses five hollow concrete block machines, used for making concrete blocks similar to those used in actual construction, and the several different divisions,—the constituent materials division, the beam division, the concrete block division, the permeability, the shear and tension and the chemical division are equipped with all apparatus necessary for conducting their tests.

Although reinforced concrete is used to a remarkable extent at the present time, and both concrete and reinforced concrete construction is becoming more and more popular every day, it is evident to anyone familiar with construction work that these materials will be more generally employed within the next few years. Many engineers are prejudiced against the use of concrete and reinforced concrete, but this prejudice is rapid

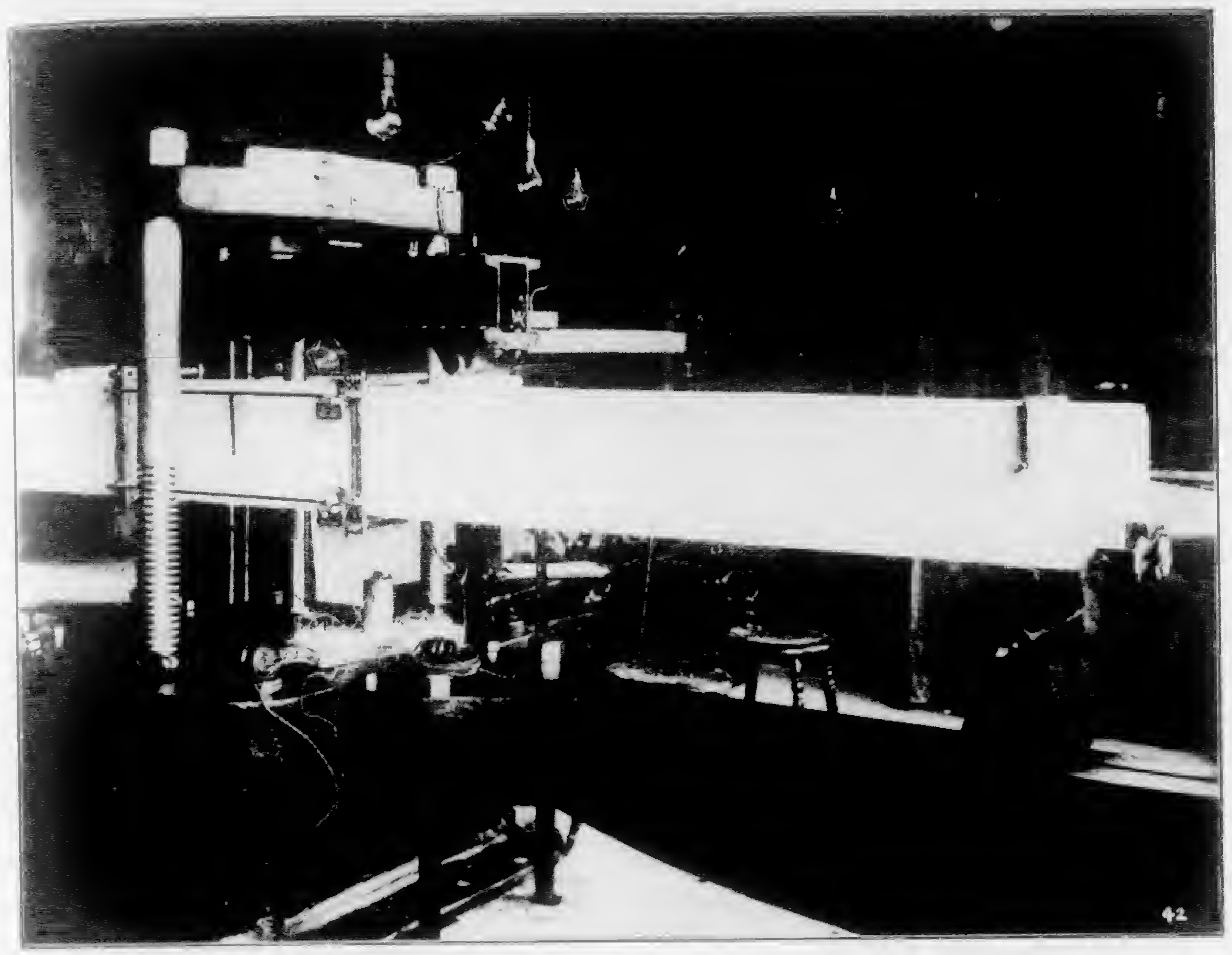

Fig. 2. Testing a Thirty-Foot Concrete Beam

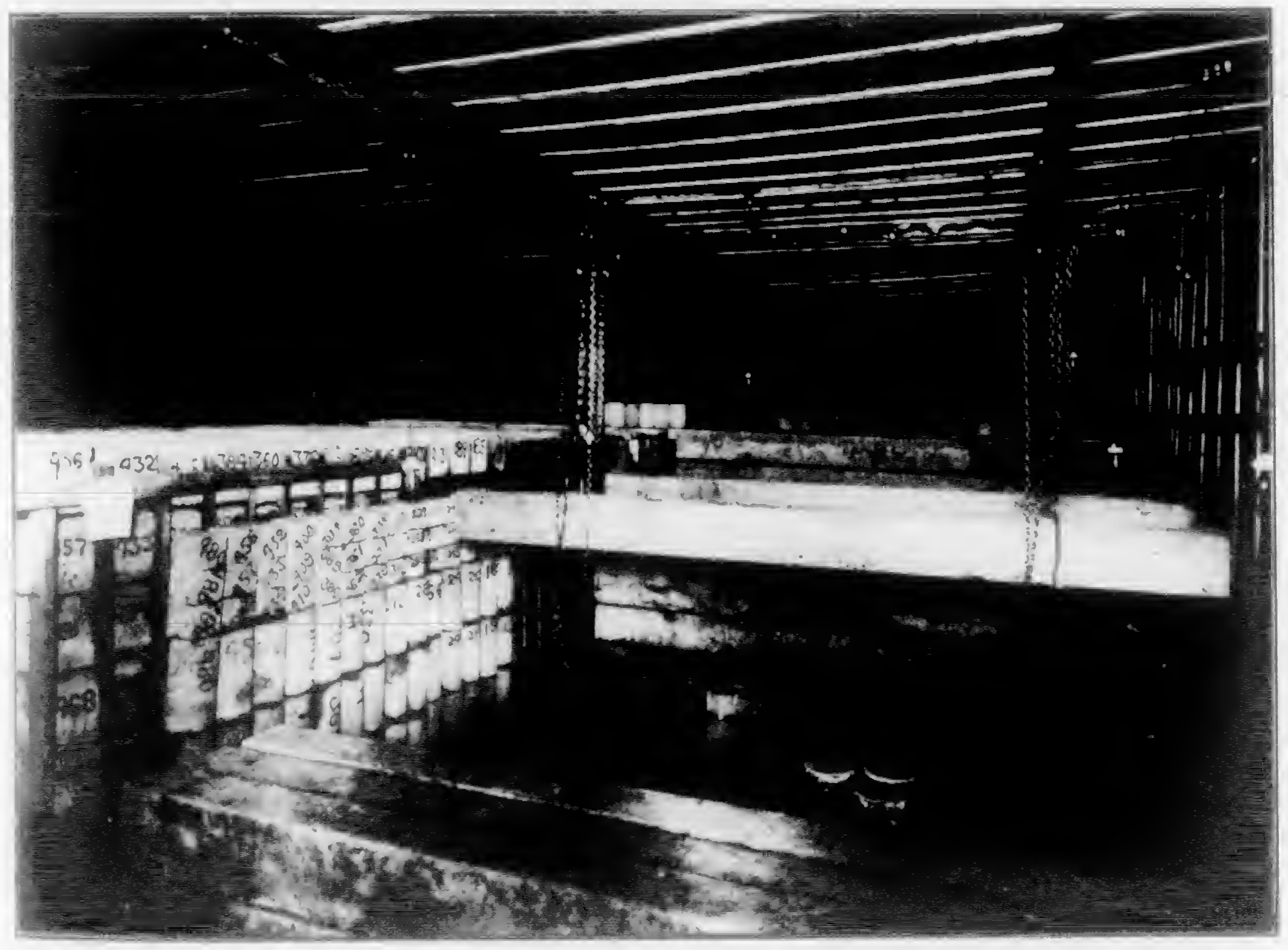

Fig. 3. Room in Which Concrete Beams are stored

being removed by the obtainment and publication of reliable data regarding this material. Without doubt, in a very few years, when most of the principles underlying the use of concrete and reinforced concrete have been fully established from tests and investigations, there will be little prejudice against the use of concrete; the present prejudice evidently being due to lack of information.

The longest beam thus far tested in the beam division has been thirteen feet in length. Beams of this length tested are made without steel, that is, of solid concrete beams, and also with varying proportions of steel, ranging from very small percentages up to three per cent. A full size beam in the testing machine is shown in Fig. 2; the load is applied at the top of the beam at points four feet from each end. The men conducting the tests watch the beam very closely while it is in the testing machine, and examine its surfaces with magnifying glasses in order to locate the fine cracks as they appear. In the beginning a load of about 5,000 pounds is applied and the machine is stopped with this load on the beam. After the observers have examined the beam carefully and made a record of the cracks appearing at that time, the load is increased, and after every 1,000 pounds additional the beam is again examined until the maximum load is applied.

In a very large number of tests the beam shows no cracks that are visible to the eye until the maximum load is reached, when the steel reaches its elastic limit and begins to stretch fast, this result ending the test. The cracks that appear on the beam and the loads at which these cracks appeared are recorded by photographs.

In beginning tests of reinforced concrete simple round rods were used, as it was thought that more uniform results could thus be had than if any of the patented systems were used. After a complete series of tests with the round rods has been made, it is proposed to take up tests of the different forms of bars that are used in practical work, and the results will be published from time to time by the Geological Survey. Tests will be made of beams ranging from six to twelve feet in length, and because of longer span will be tested later, if necessary, in order to get results that can be applied to almost all practical conditions.

The concrete used in the different beams tested, as described above, is molded into cylinders and cubes, which are tested in order to get the direct strength of the concrete. These cylinders and cubes are all tested at different ages, generally at ages of 7, 28, 90, 180 and 360 days. The cement, sand, stone, gravel, or other material composing the concrete is carefully proportioned by weight, the correct percentage of water is used and the whole mass is placed in the mixer and thoroughly mixed. It is then deposited very carefully in molds or forms which after twenty-four hours are removed. The concrete is then moved into a storage room, shown in Fig. 3, and is there sprinkled with water three times each day. Each test piece is numbered on a card index, which tells where information relating to the test pieces can be found and also indicates the dates on which the different pieces are to be tested.

A branch of the work that should be of interest to everybody, especially the small home-builder, is the investigation of cement building blocks. Many houses are now built of cement blocks in preference to wood, because generally cement block construction is cheaper and better than wood, since it is fireproof, more durable and less expensive to maintain. The exterior surfaces of wooden buildings must be painted, and clap-boards must be added from time to time; but when the cement block building is finished, the surface is there once for all; no further treatment, no repairs, no maintenance are necessary.

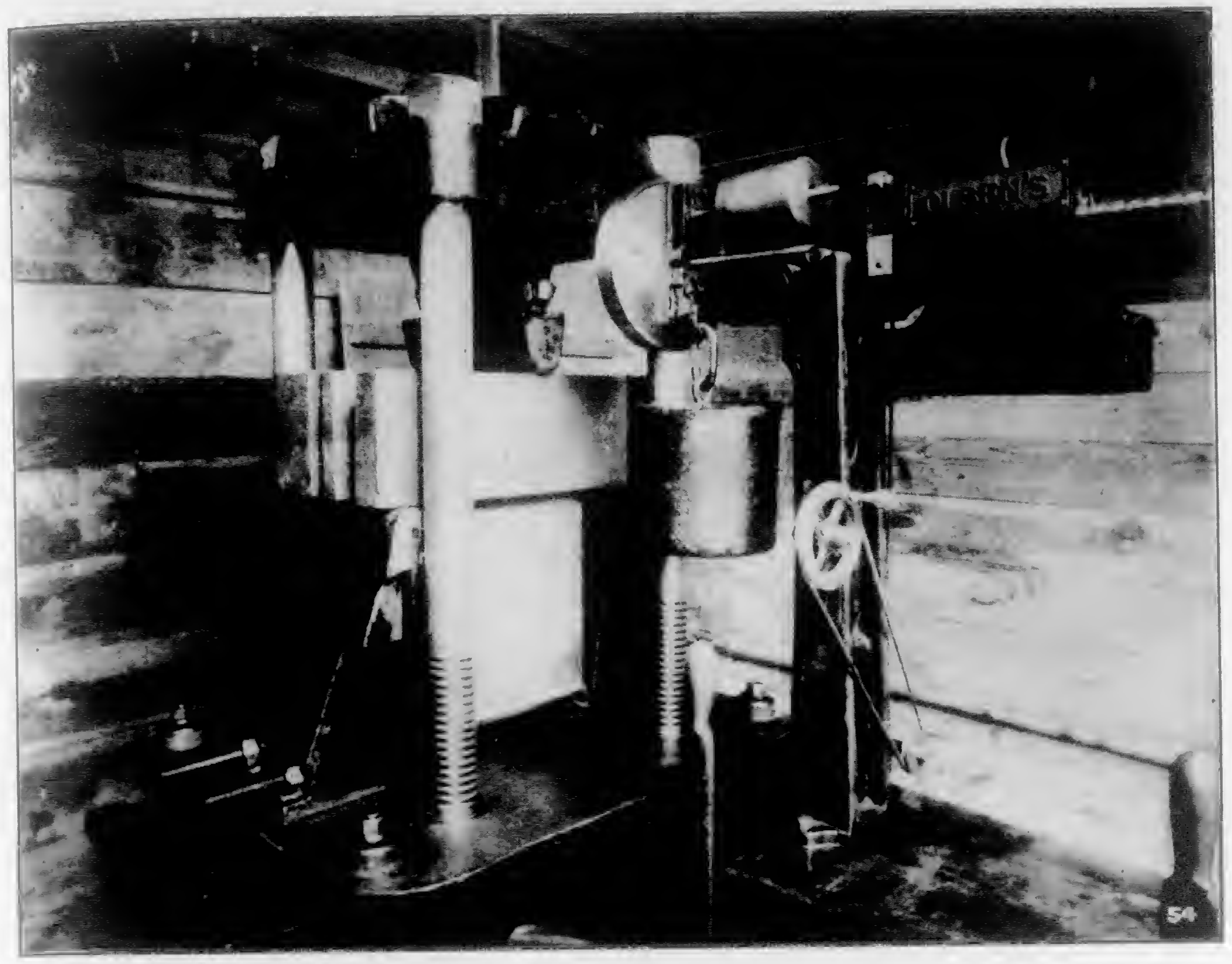

Fig. 4. Testing Concrete Blocks

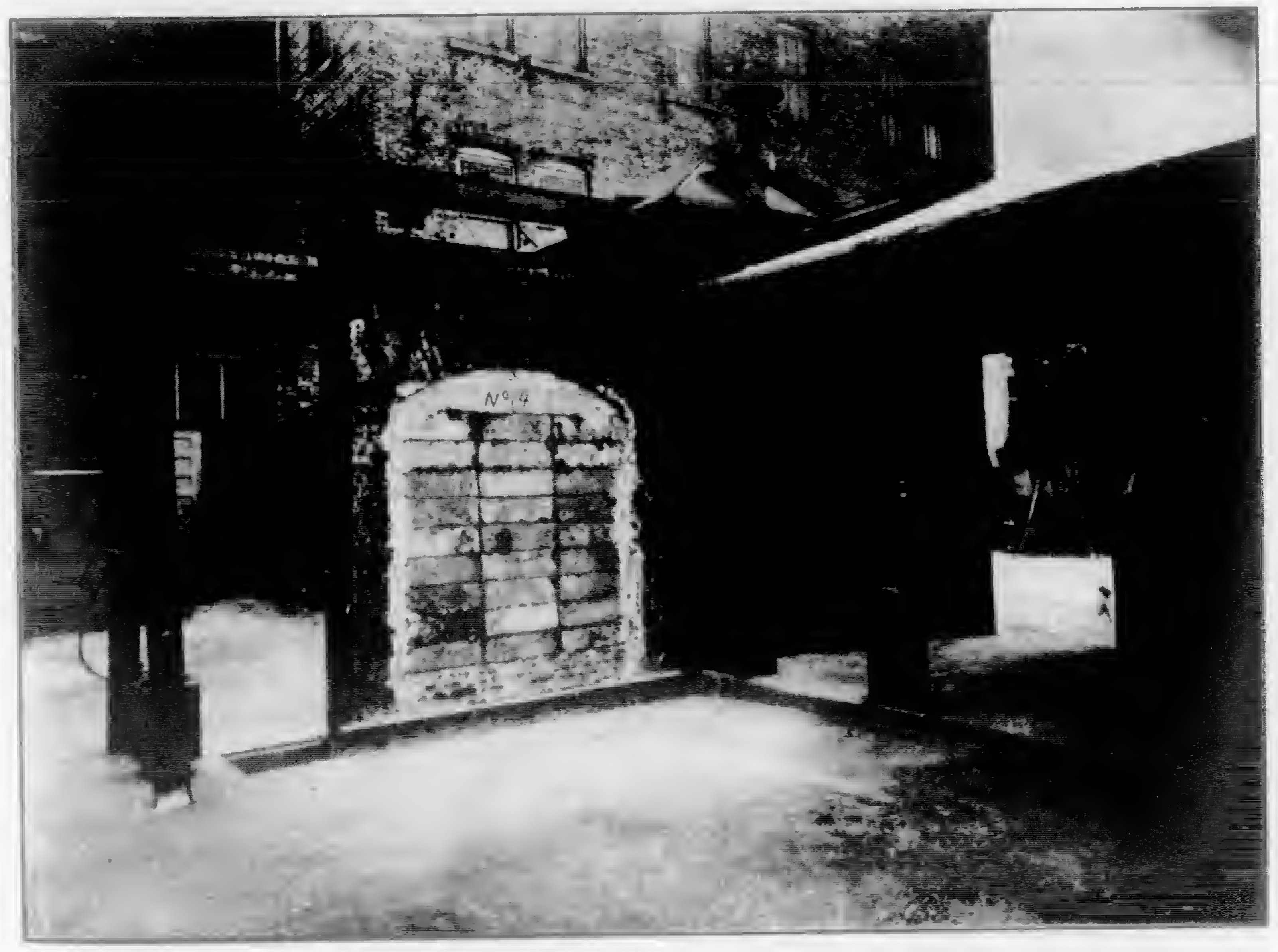

Fig. 5. Testing Fireproofing Qualities of Concrete

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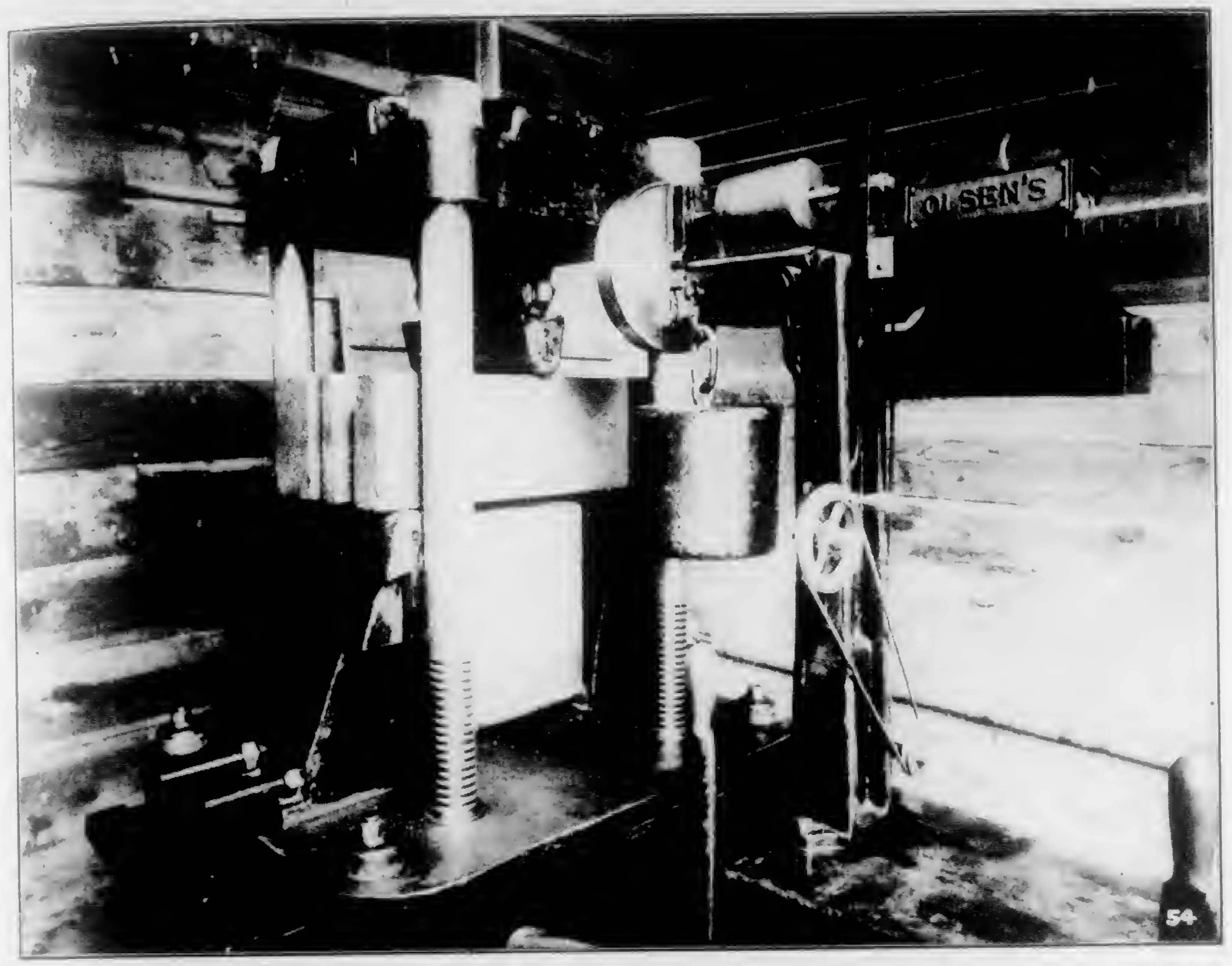

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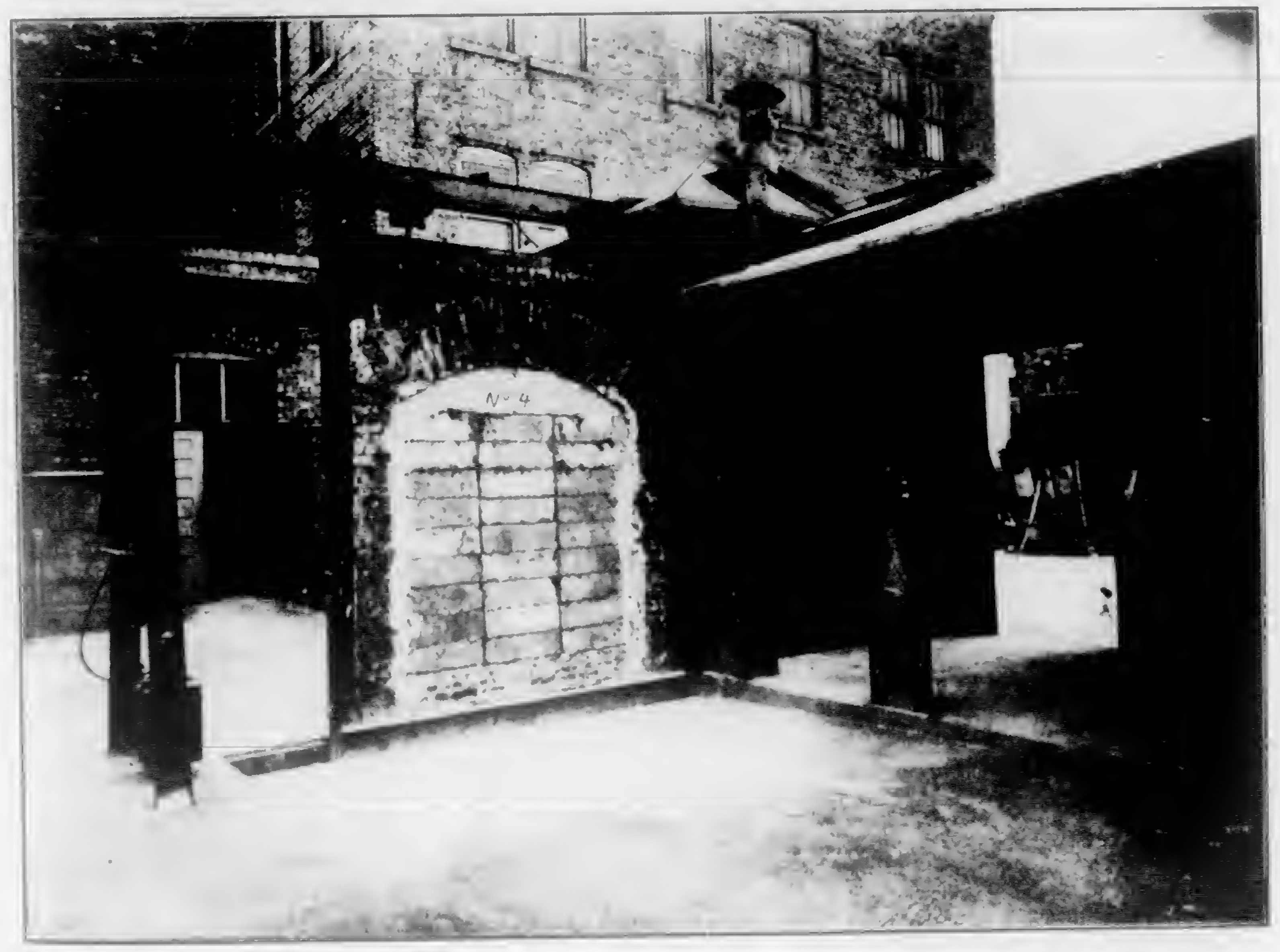


Fig. 5. Testing Fireproofing Qualities of Concrete

All the cement blocks used in these investigations are mixed in the concrete block machines. The concrete is mixed in a one-third cubic yard cubical concrete mixer and deposited on the floor of the testing room. It is then shoveled into the hollow block machines and compacted very firmly in the forms. Varying proportions of concrete, sand and stone are used in order to determine the relative value and economy of using different mixtures. Some blocks are made of wet concrete, others of concrete very dry, and still others of concrete having a consistency medium between wet and dry. In actual practice, concrete blocks made from comparatively dry concrete is usually preferred by the manufacturers, for these blocks harden quickly and the forms may be removed almost as soon as all the concrete is placed in the machine. By this practice it is possible to use the same machine for making a large number of blocks each day, whereas when wet concrete is used, the blocks must remain in the machine for a much longer time before they can be removed. When the concrete blocks are removed from the forms they are placed in the storage room and tested at different ages. The storage room used for concrete blocks is similar to that shown in Fig. 3. Cylinders are also made from the same concrete that is used in the blocks, and the results of tests of the cylinders and of the blocks establishes a relation between the strength of the concrete in the cylinder and that of the concrete in the block.

When the blocks and cylinders are placed in the storage room, each test piece is numbered and its number is filed away on a card in a card index. Each card bears the date on which the test piece is to be tested and the cards are filed in chronological order. This brings the current date at the front of the drawer each morning, when cards bearing the same date are taken out and the pieces are taken from the storage room and tested. The results are compiled on forms and later published in reports issued by the Geological Survey.

Concrete blocks are tested at the laboratories in two different ways; first as shown in Fig. 4, to see how much of a center load each block will stand. Although blocks are not actually subjected to a load of this kind in practice, the results of this test make it possible to compare the relative values of different building blocks. Second, after the block has been broken at the center by this load, each half is placed in the testing machine and crushed, in order to find the crushing strength of the block. The results of this crushing test show how much pressure similar cement blocks will stand when used in actual building construction.

The results of the great fires at San Francisco and at Baltimore demonstrated very clearly the fact that modern buildings are not so nearly fireproof as they should be and as they can be made. The lack of fireproofing in the past has been due somewhat to the reluctance of owners to add a small percentage to the cost of their buildings by properly fireproofing them. The failure to employ fireproof construction more generally, however, was due in part to the fact that proper information was lacking, and many engineers, architects, and owners who tried to make their buildings fireproof used all the information at their command at the time of building.

The art of fireproofing has been developed rapidly within the last few years, but there is still much to be done, especially in relation to the fire-resisting properties of concrete. In order to obtain information to meet these needs a series of fire tests are being carried on by the Geological Survey at the Fire Underwriters' Laboratory at Chicago.

For this purpose a hanging door having a steel frame and a one-foot wall of fire brick inside of it is used. At the center of this frame there is an arched opening of about the size of an ordinary door. For the fire tests this opening is built up successively with different materials, ordinary building brick, fire brick, hollow tile blocks, the different kinds of cement building blocks, stone, concrete and terra cotta. When the opening is filled with cement blocks, it has the appearance shown in Fig. 6. After the opening is filled, a flaming gas jet is played all over the door for a long time and when the heated surface is very hot, the gas is turned off and the door allowed to cool. In some tests the cooling takes place slowly, in others a stream of water is played on the door immediately after the gas is turned off in order to reproduce as nearly as possible the actual conditions in a fire.

When these tests are completed the results will not only show engineers and architects what material is best for fireproofing and how much should be used to produce the best results, but will also teach the small builder, the builder of a home, what kind of a cement block is best adapted to make his house fireproof.

It is the consensus of opinion among engineers that a reasonably fireproof building can be constructed, and it is hoped that the art of fireproofing will be so developed in the next few years that the public will also be convinced that this is true. It is also desirable that the public should be thoroughly informed as to the fire-resisting qualities of the various classes of building materials and it is expected that the work being done by the United States Geological Survey will furnish reliable information not only on this subject, but also in regard to the strength and other properties of these materials.

* * *

The Artistic Temperament

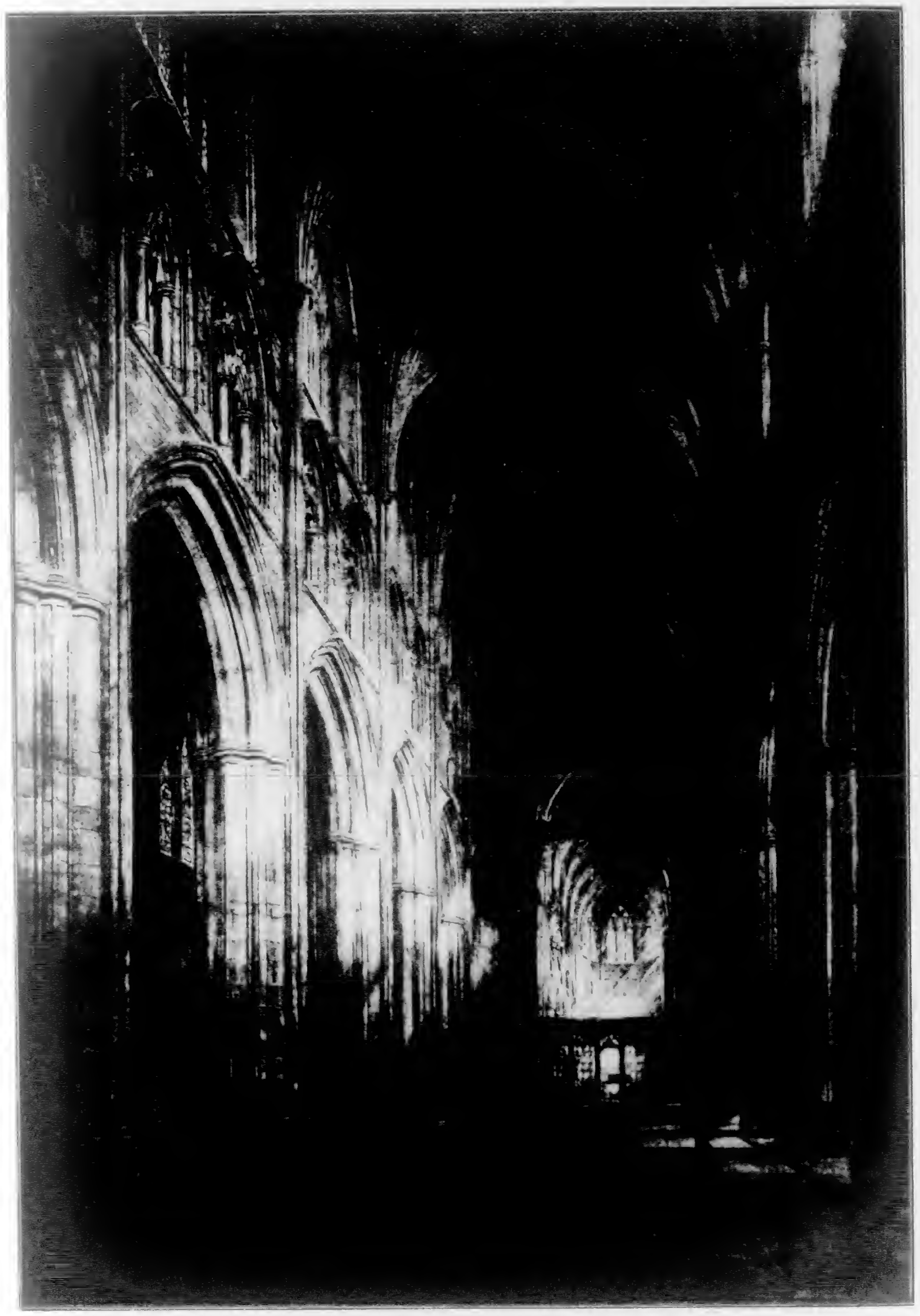
THE last few years there has been out-cropping here and there some mention of the fact that the people are growing more artistic in their ideas. This not only applies in the building of homes, a subject which has been covered before, but of late with the more frequent mention of this influence and the general awakening and prevalence of the artistic temperament, we find that it is not only individuals that are influenced, but all up the line to government doings, and even the hearts of the railroad men are touched.

In writing of colors in brick work in New York, a correspondent says that it is interesting to note the change in taste during the past twenty years in the color of brick used in construction work.

Formerly most of the brick used was of a dark, sombre color and the only relief offered in the way of lightening the effect was a little stone trimming here and there. Now, however, this is all changed and is not only lightened up by the use of more brightly colored brick, but also by the general development of the artistic taste of design as well as color, and the effect is very pleasing.

Among the late, and perhaps the most striking converts to the artistic temperament are the railroad managers who are now giving attention to beauty and pleasing effects in bridge designing as well as durability, and if it reaches the hearts of the railroad managers it is easy to see that the spread is thorough and must include practically all men of affairs in the world.

Another decade will undoubtedly bring some great changes in building operations, including everything from a fence to a mansion. And it is a good sign, and one of those signs of the times which shows that we are learning how to stand prosperity.—Clayworker.



Design for the New Cathedral, Washington, D. C.
G. F. Bodley and H. Vaughan, Architects

The New Cathedral, Washington, D. C.

IN VIEW of the several churches and cathedrals that are to be built in San Francisco in the near future, Bishop Satterles of Washington, D. C., has requested the Architect and Engineer of California to print a description of the proposed Washington cathedral, believing that some of the many fine features of that edifice may prove of value to the San Francisco architects. The Washington edifice was designed by G. F. Bodley, R. A., F. S. A., of London, and H. Vaughan, architect, of Boston.

In style the building is "Gothic" of the fourteenth century—a style of architecture, as we think, the most beautiful that the world has ever seen. In its dimensions it will be larger than most of the cathedrals in England, or on the continent. The total length is 476 feet, and the total width 132 feet. These are the external dimensions. The height to the ridge line of the roof is 130 feet; while to the internal apex of the vaulting it is 93 feet.

The central tower will rise 220 feet from the ground. The plan is that of nave and aisles, transepts, choir, and two chapels. Double aisles are planned for the nave. These latter will be especially useful for monuments and memorial windows and tablets. The choir terminates in an aspidal sanctuary. The building will be vaulted in stone throughout. In their official report the architects say:

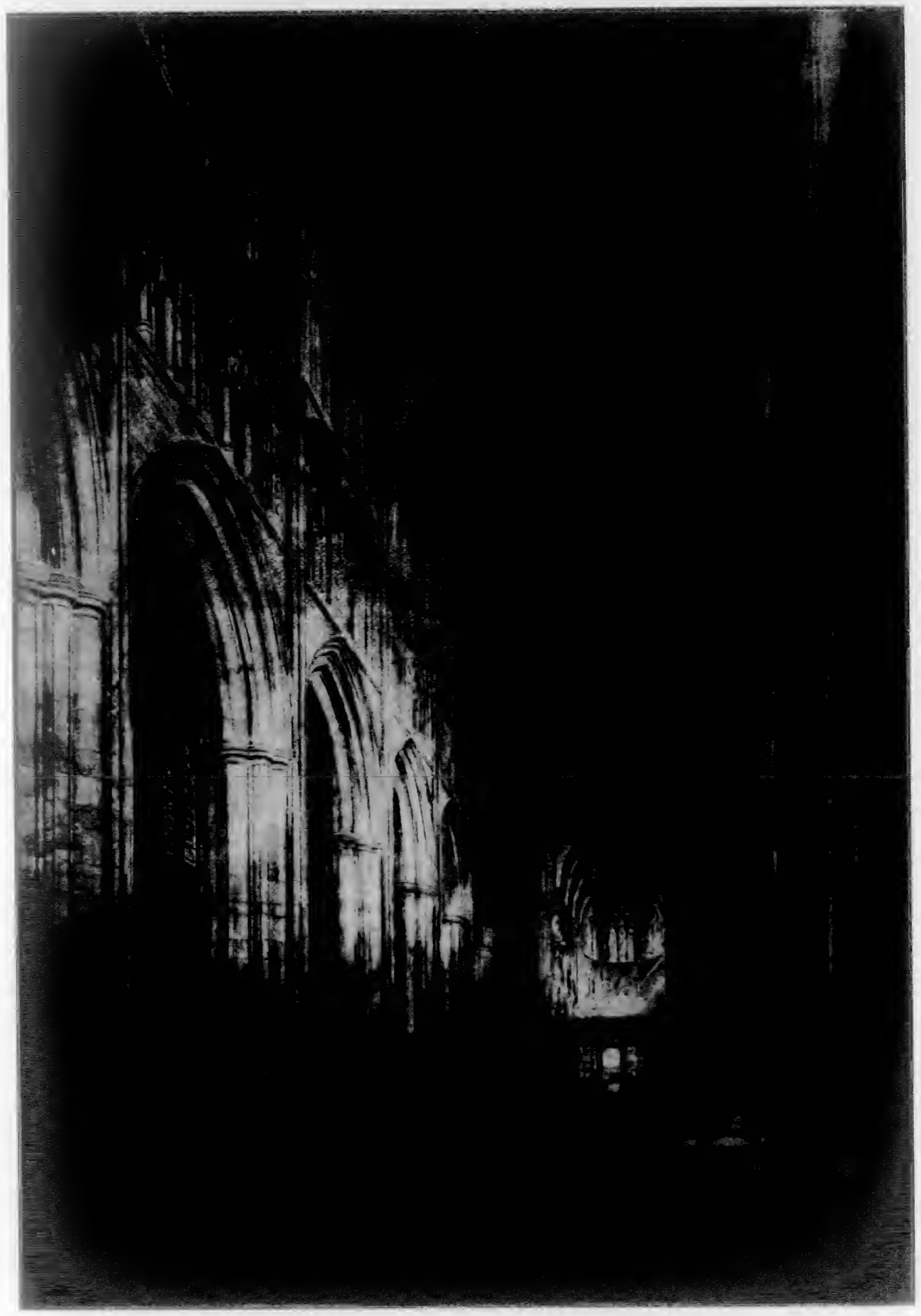
"The lighting of the interior is destined to have a fine effect, being lit by ample Clerestory windows. The light, thus coming from so high a level, will be striking and uplifting. There are lower windows in the aisles; but they are quite subordinate. Then there will be a striking effect of light in the "sanctuary," or eastern part of the choir. For there is to be a large window both on the north and south sides, coming lower down, but much out of sight, being in the depth of thick walls. The windows will be 65 feet long. Light will be given by them to the apse, in an especial and striking manner. It is for this important effect of light that we propose to have no chapel at the far eastern end, in the more usual position when a choir-aisle runs round the east end.

"This plan has the advantage, too, of giving an interior of which the whole length is seen on entering at the west end; thus adding to the perspective, and to the impressive effect of the building.

"There are two chapels at the ends of the choir-aisles. The eye will be attracted down the "long-drawn aisles" to these chapels. There should be no windows at the end of these two aisles, for light there would take the eye and have a disturbing effect. The apse, with the effect of light there that we have spoken of, should be the leading and the impressive feature. The two long windows will not be seen until one gets opposite to them, while their effect of light-giving, as we have said, will be exceedingly good. The exterior of the apse, unhidden by a further building, will be commanding in its lofty proportion, and will make a very conspicuous landmark eastward, crowning the hill with its cluster of many pinnacles.

"The chapels at the ends of the aisles would be used for people during choir services, and will thus afford accommodation. An isolated lady chapel would be a place per se and not useful for those attending the services conducted in the choir, nor would it add to the internal effect. It is for these reasons that we have planned the chapels where shown, and no separated lady-chapel. The chapel in the position shown will be bright with its south windows. There will be a gleam of light from it.

"Another feature will be a broad soffit, 9 feet 6 inches wide, forming the eastern arch of the central tower. This deep sweep of soffit, or under side of the arch, will be carved with figures of angels, arranged in a suitable design. It would be, as it were, an angelic canopy over the Rood and will be an effective treatment. It would recall the words, "which things the angels desire to look



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"Beyond this arch would be the choir and the sanctuary. In the latter will be represented our Lord, in glory, blessing, in the upper part of a lofty and dignified Reredos.

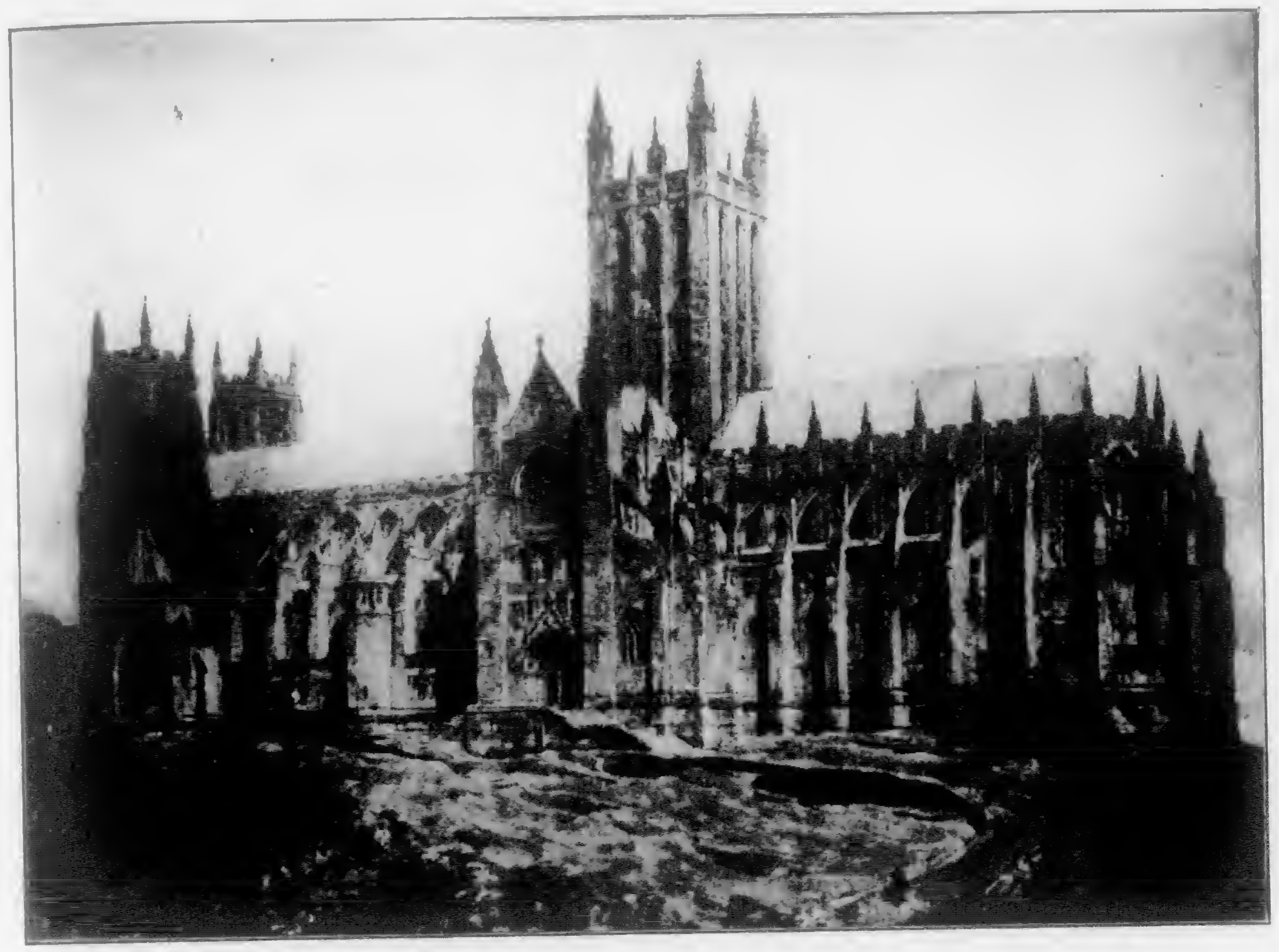
"The stained-glass Clerestory windows, as they could be placed, should consist of single figures, for they are too high up to contain "subjects." The glass should have finely-colored figures on a light, silvery ground. These windows could set forth the history of religion in the world, beginning in the nave, with some of the old testament worthies, prophets and kings; and so on to Malachi, the last of the Prophets, and St. John the Baptist, and then to the apostles and saints of the new testament, and to many of later Christian years. We think, however, that all represented should be worthies of the old testament or Christian saints, recognized as such. The great church, however, will not have any very especial need of colored glass. It would be desirable, however, to have it in the south windows of the lady chapel, or the sunlight may be too strong there. It would be well, too, to have it at the east end windows of the apse. But there are other things for which gifts would be more desirable, before the glass, in point of time. There are many stone statues desirable, and many carved subjects.

"The site is a remarkably fine one, very commanding and beautiful. The cathedral will be a conspicuous object from the Capitol and other parts of the city. When complete, with its surrounding buildings, it will be 'as a city set on a hill.'

"Approaching the west end by a triple avenue of trees, those visiting the cathedral will find three lofty open arches, the central one wider, and much higher, than the other two. These lead to three wide vaulted spaces to be used as large porches or porticoes, and so on to the three recessed west doorways. The central portico could be treated richly internally with arcading and many statues and carved subjects. These statues would be such as the major and minor prophets, etc., etc., David and other worthies, all old testament characters, ending with St. John Baptist, who could be turning to the central entrance, where, in its midst, there could be the figure of our Lord blessing those who enter. Below could be inscribed 'Lux Mundi,' or 'Salvator Mundi.' St. John Baptist could hold a scroll inscribed with his 'Ecce Agnus Dei.'

The architects in their notes have the following to say in regard to the treatment of the building with respect to its richness, or the reverse: "We think the drawings show that it is amply rich enough. That there should be plenty of surface of massive stone ashlar is most desirable for all good architecture, especially with a building so large as this. A small building may be rich all over, but it is beneath the dignity of a great one. For a large building, if well designed, has an instinctive dignity and a grandeur about it that may well dispense with too lavish exuberance of ornament. Again, there should be concentration of richness and not a spreading of it all over a building. We think our building is rich enough. Internally, the Screen and the Reredoses, the Stalls and the Bishop's throne, could be as rich as any donor likes to make them; but we think the fabric is sufficiently ornate, taking it as a whole. That it will be impressive by its size and dignity we doubt not. As we have said, we have suggested a good many statues which will give much interest to the building. They could be added by degrees.

"On the central tower we propose to have a band of large angels, each holding a scroll with a word of the 'Gloria in excelsis Deo,' etc. They will give a rich effect and teach a constant song of praise. This band of angels



Design for Cathedral, Washington, D. C.
G. F. Bodley and H. Vaughan, Architects

will be an original treatment, not before attempted, certainly not on this scale. The figures would be about 10 feet high.

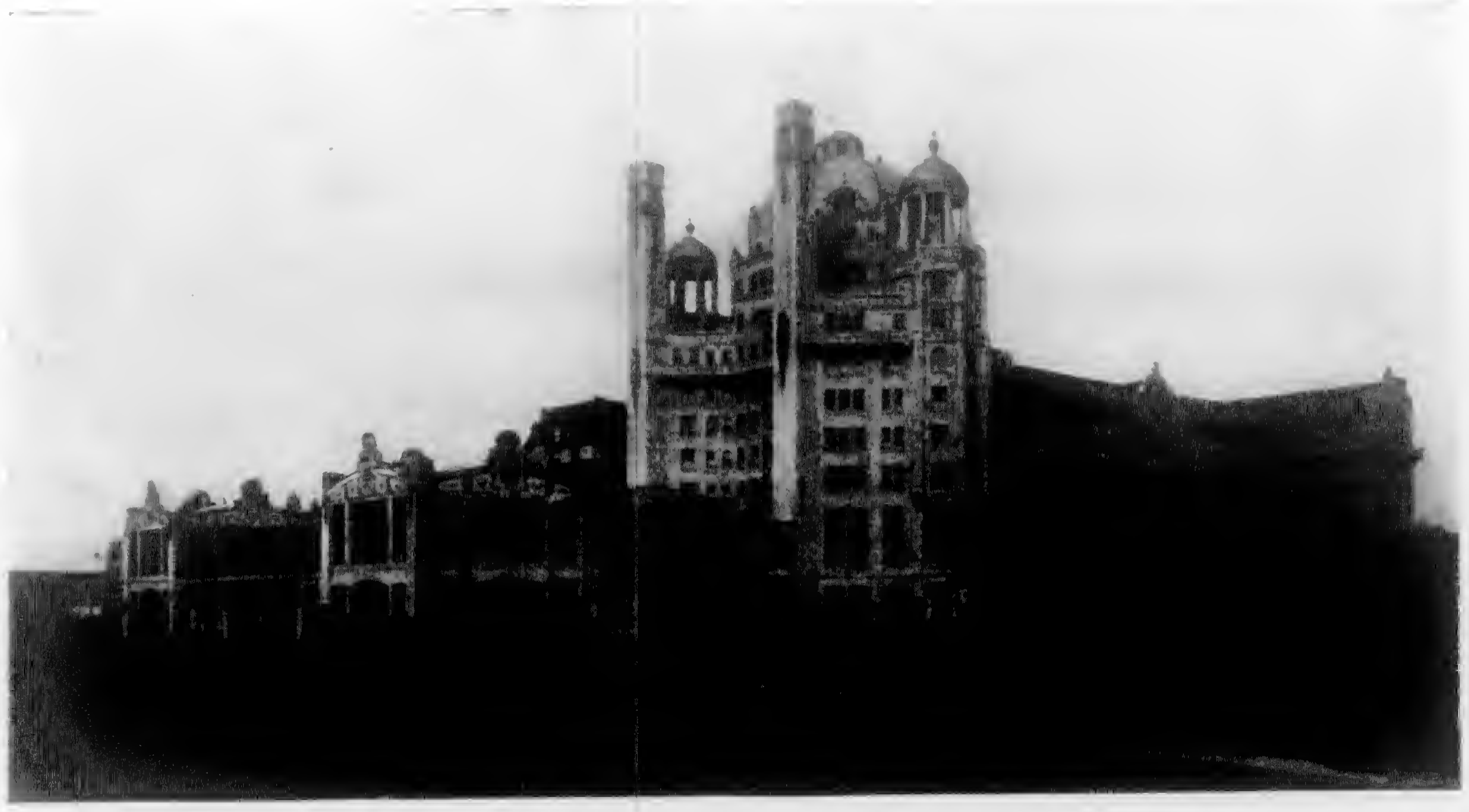
"Many details for the stone-work are already prepared, and progress could very soon be made.

"There remains the question of the stone to be used, and it is a very important one, for stone ashlar would be used both inside and outside the building. Knowing, as we do, the good effect of churches built entirely of a good light red stone, and the cold look that white stone has, we cannot but recommend the use of a good red one. It should be by no means brown, but of a good, soft-looking, rosy tint. We would mention Hoar Cross Church, near Burton-on-Trent, as a church where red stone is used with good effect, and the interior of Clumber Church, near Worksop. Lord Burton is now building a church at Burton all of red stone.

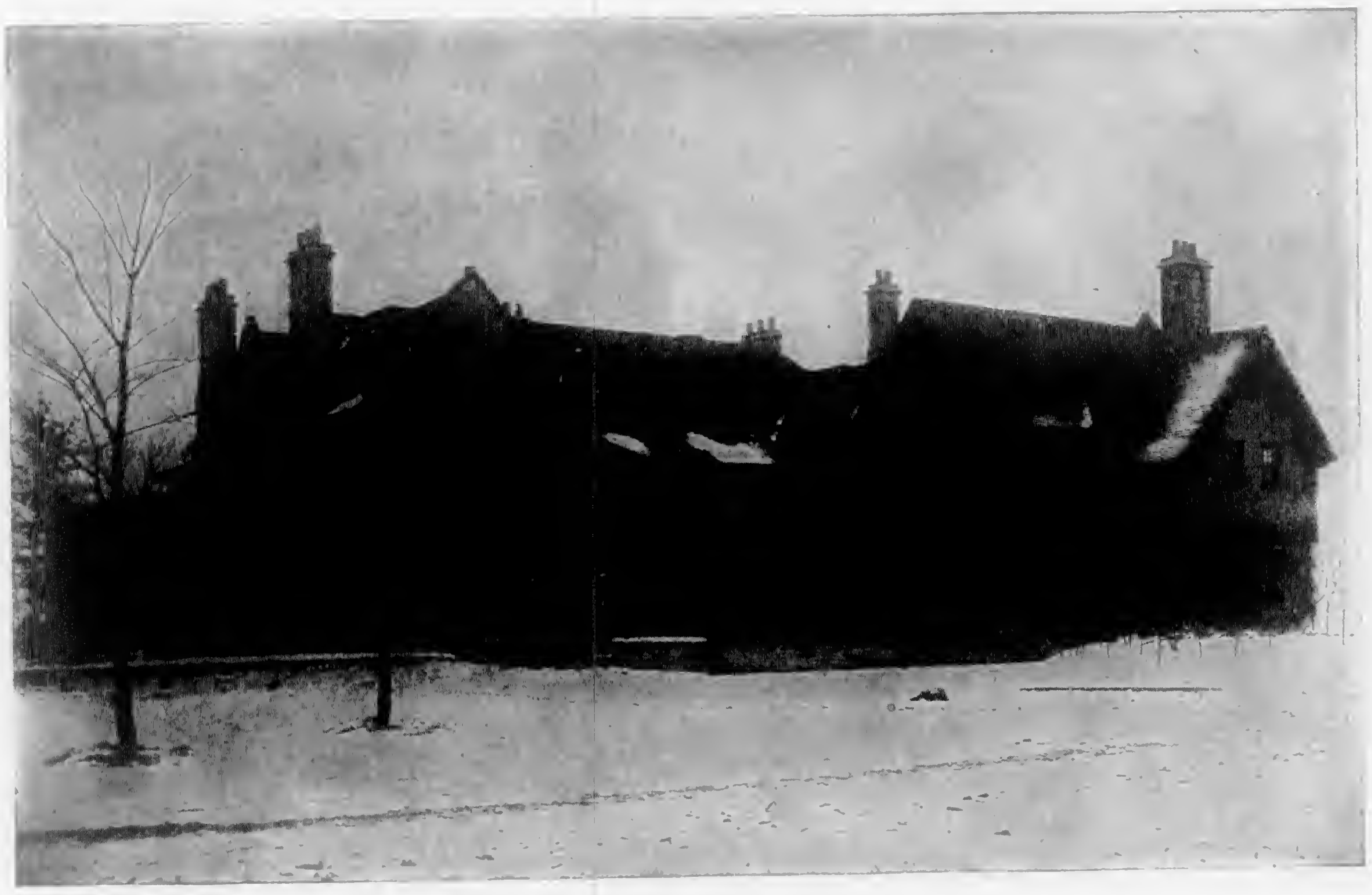
"The red stone we should use would not be too dark, or at all heavy-looking. With red stone a church has a warmth of color, and a look of the absence of newness, that is very satisfactory. Details for red stone are best bolder, and therefore less expensive, than those suitable for a white stone. Specimens of stones are laid before you. Our advice is that the best of the red stones be used. We believe it would be entirely approved of if decided upon.

"It does not seem necessary to have many steps at the west end. The ground does not require them. We think about four would be enough. To have many steps there would be to raise the fabric needlessly. There must, however, be a flight of many steps at both the transept entrances, as shown on plans.

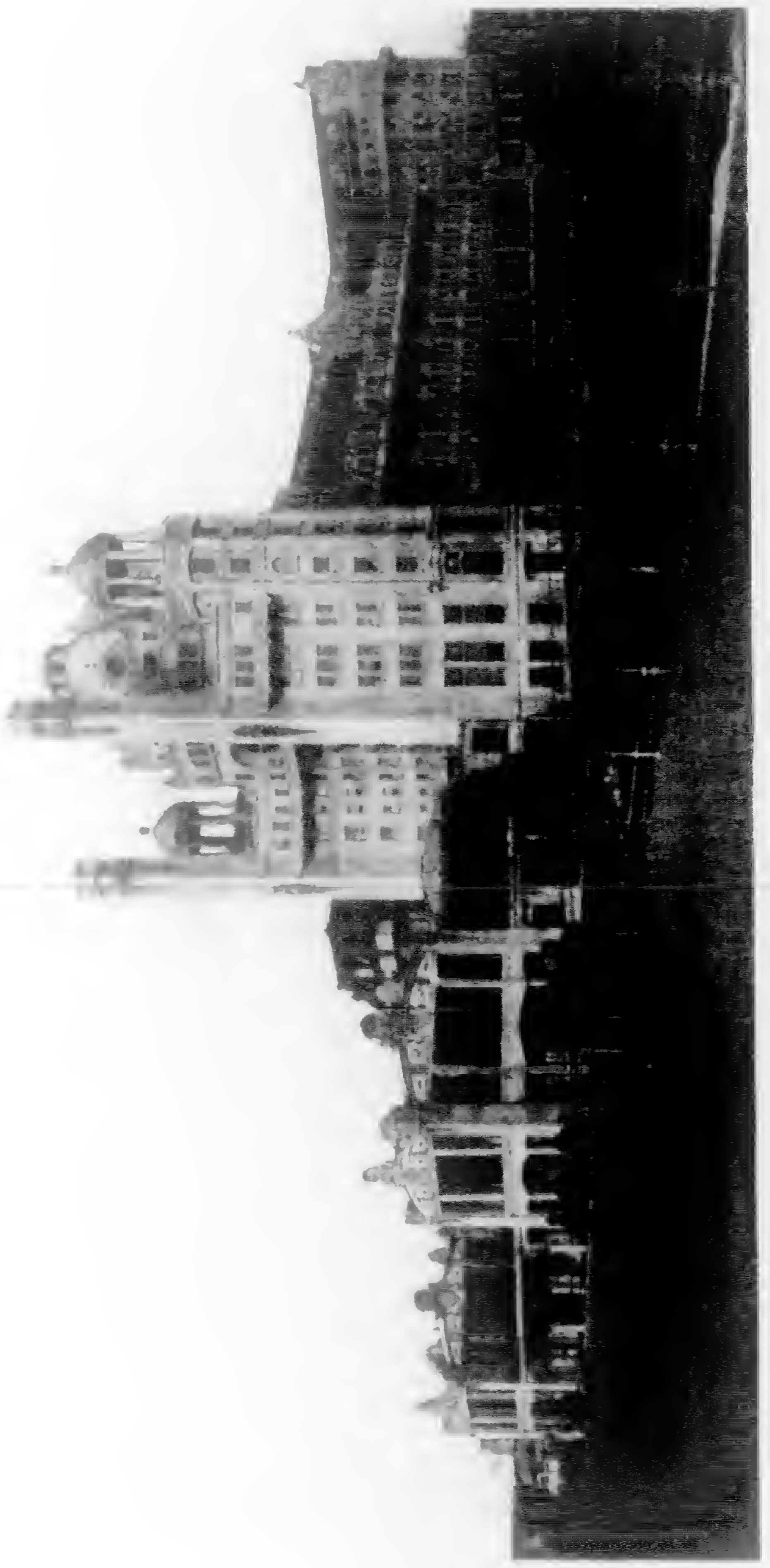
"The pavement of the interior should be of American marbles—simpler in the nave and aisles, richer in the choir, and especially rich in the sanctuary."



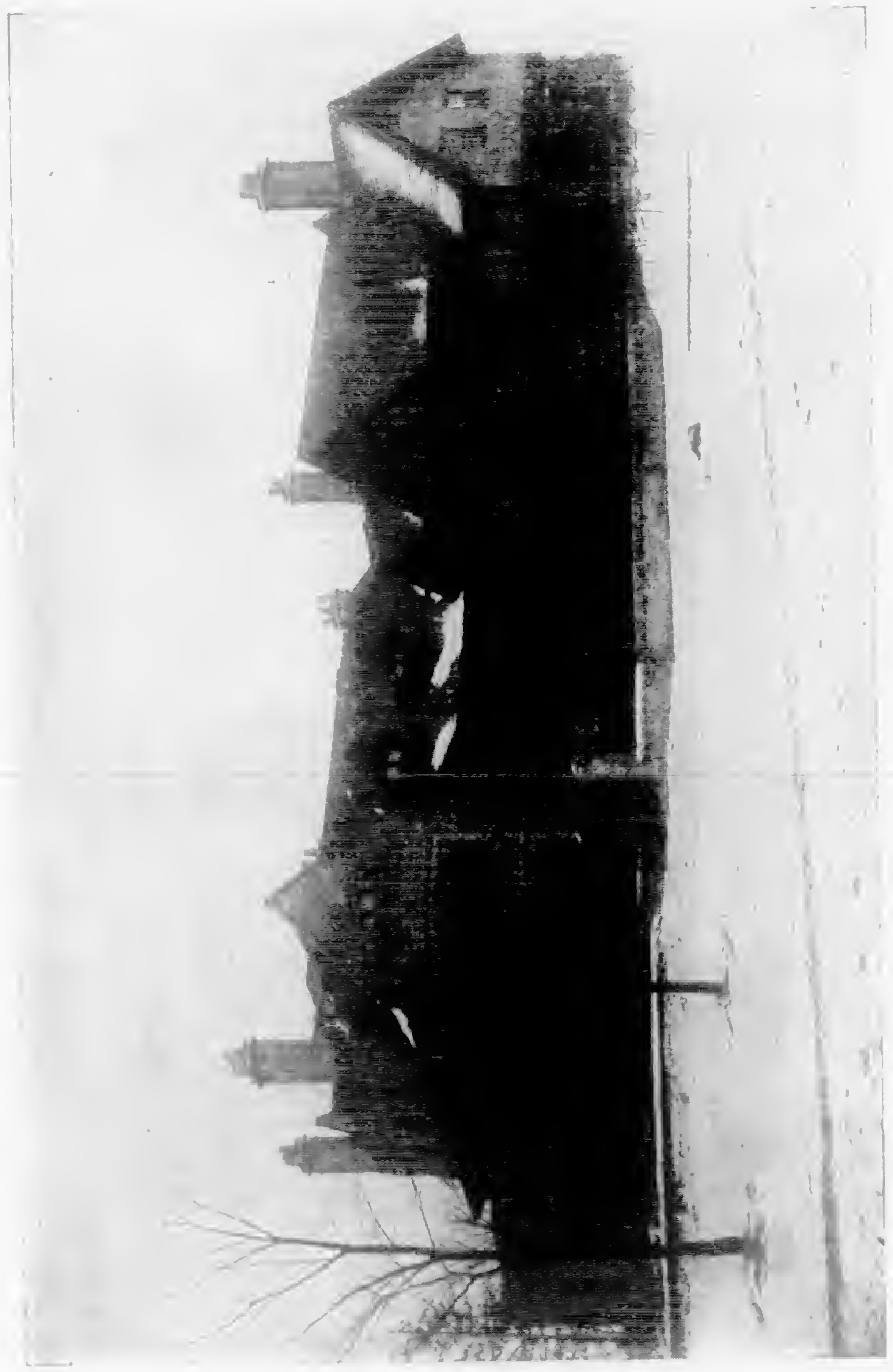
Marlborough—Blenheim Hotel, Atlantic City, N. J.
Price & McLanahan, Architects



Residence of E. Chandler Walker, Walkerville, Ont.
Albert Kahn, Architect



Marlborough—Blenheim Hotel, Atlantic City, N. J.
Price & McLanahan, Architects



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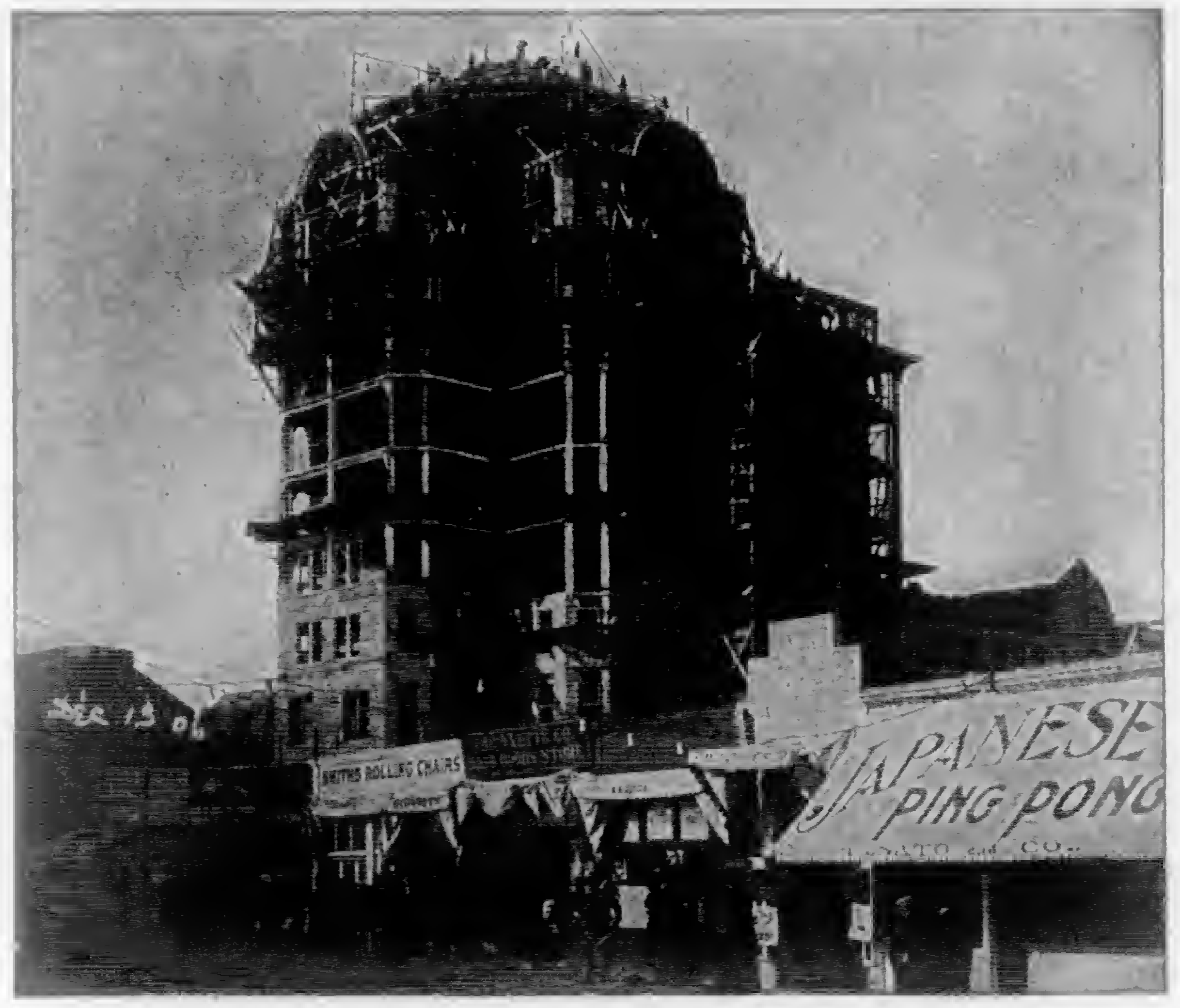


Traymore Hotel, Atlantic City, N. J.
Price & McLanahan, Architects

The Kahn System of Reinforced Concrete

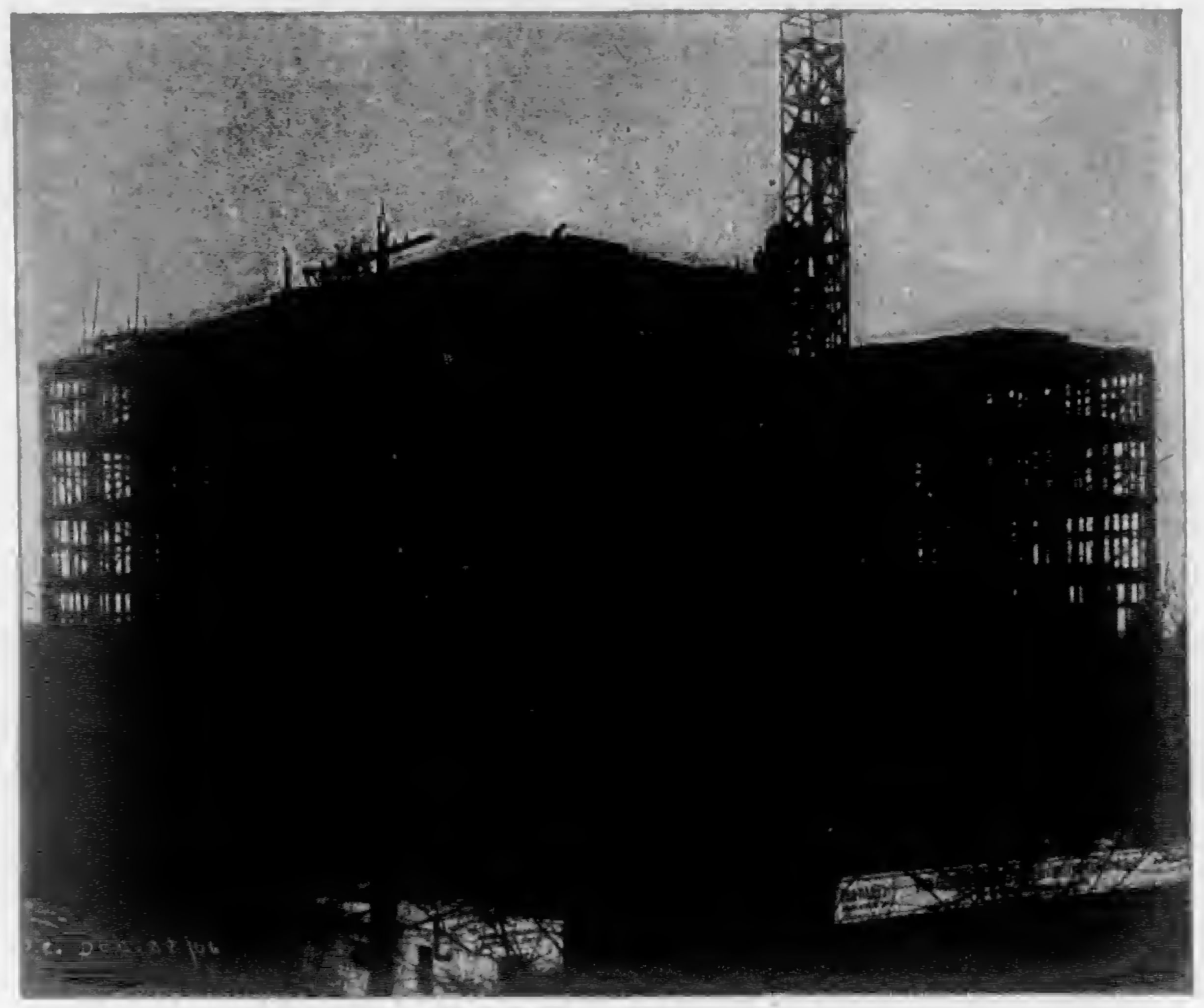
As Applied to Hotels, Residences and Apartment Houses

THE questions which arise in the planning and building of a home are the same as those which confront the builder of a hotel or apartment house and vice versa, the various phases of the difficulties simply presenting themselves in different proportions. For, after all, these buildings are all used for the same purpose and that which will increase the comfort and enjoyment of life in one will serve the same purpose in the other.

The speed of erection of a hotel or apartment house is an important factor. It is often the case that an old building is demolished to make place for the new and under that condition the property must be idle during the time occupied by both the destroying and creating periods. In large hotels and apartments this is a serious item and the only way to get around it is to have the new property in earning condition at the earliest possible time.

Closely connected with the requirements of speed is that of noiseless erection. It may be desirable to demolish only a portion of a hotel and allow the remaining portion to accommodate the guests during the construction of the new portion. If this is the case the use of structural steel with its noise is out of the question and concrete must be used. In the building of both the Marlborough-Blenheim and the Traymore hotels, this was one of the advantages of the Kahn system that appealed most strongly to the owners.

Comfort and security are, however, the prime factors to be considered in the building of a permanent habitation of any kind. The Kahn system renders a building sound-proof, dust-proof, clean and sanitary. The sound-proof quality is insured not alone by the concrete being a poor conductor of sound, but where hollow tile construction is used the air spaces in the tile also act as insulation against the passage of sound. Moreover the dead weight of the construction is so great in proportion to the live load that the ordinary noises, such as moving of furniture and other heavy bodies, or the rapid and noisy moving about of people has no effect.



Perry Apartments, Seattle, Wash.
Somervell & Cotes, Architects

The solidity of the construction leaves no spaces between floors and in partitions where dirt and dust may collect during construction and become a perpetual nuisance by slowly working through openings and cracks afterward. Neither is there any place afforded after the construction is complete for the lodgment of objectionable matter. For the same reason the building is vermin-proof. The ease of regulation of temperature because of the excellent insulating properties of the construction, together with the above features, makes the building extremely sanitary.

Beside the things which insure the comfort and health of the occupants, that which will increase their pleasure—architectural beauty—must be taken into account. The Kahn system in no way interferes with exterior finish, in fact on the exterior of a building there may be no indication of its strong interior construction, while the possibilities of interior decoration are much increased. The perfectly flat ceilings prescribe no limits for the decorator's fancy or the workman's execution. Where columns are exposed they can be decorated to suit the taste and the architectural and decorative effect to be gained by the use of reinforced concrete stairways are limitless.

The necessity of having structures of this class fireproof is obvious. A suburban home may be closed for a season with its owners feeling safe that there is no danger from fire; the owner of a city home may well feel that his valuable furnishings are safe and his family free from danger of fire; the guests of a hotel need feel no alarm, being assured that there is no danger of a holocaust.

Architecture and Dress Reform

By GLENN BROWN, Architect, in the Inland Architect

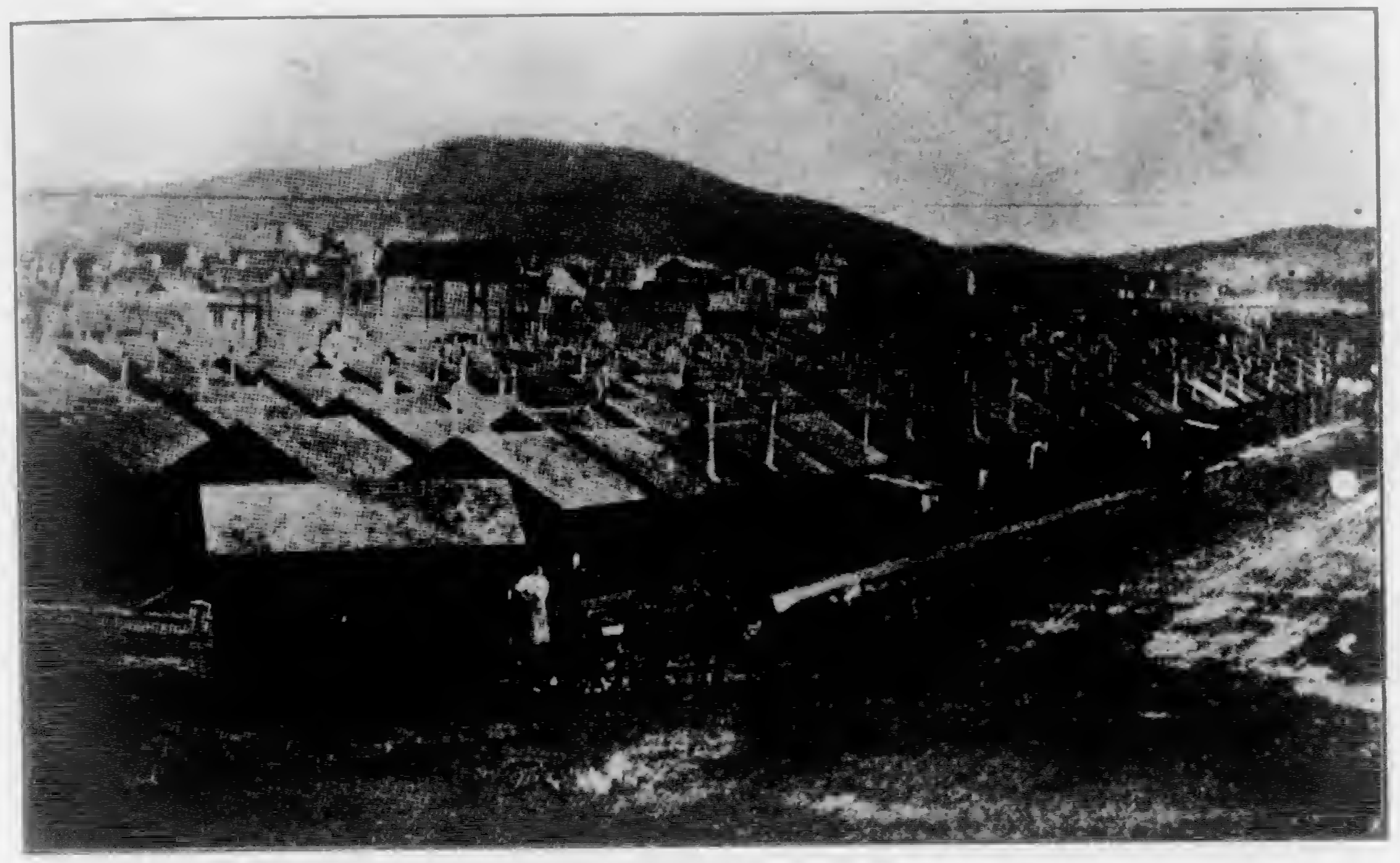
A STRIKING commentary on modern architecture occurred at a recent fashionable evening reception. A craning of necks drew my attention to a man in faultless evening dress, startlingly transformed into an object of ridicule by a reflection in a mirror showing his back clothed in loose fitting red flannel. He was hustled from the room by the floor committee. Following the curious crowd, I obtained the following novel idea on dress reform:

"I am infatuated with the modern system of design in our great commercial buildings and see clearly its ready adaptability to modern dress.

Modern Architecture—
Note the Difference in the Front and the Side of the Building

You have no doubt noticed how thoroughly our great architects have developed a style of great beauty for the front and economy for the rear. This innovation consists in building a front of precious stones and classic design and erecting the side walls without form or order of cheap and ugly material. While the offensive sides are always visible, no one is foolish enough to look at them. While the effect often destroys the beauty of a neighborhood sensible people see only the beautiful front. This wonderful system saves the architect time, money and trouble, as he has only one facade to design. It saves the owner's purse, as he has only one front to pay for. The great architects of official Washington, cultured Boston, commercial New York and progressive Chicago all zealously follow the system.

"After mature consideration I have determined to adopt the same system with my clothes. I have rich material and elegant cut for my front and cheap material without form for my back. It saves fitting, study and goods. Only the elegant front will be enjoyed and the offensive rear will never shock an intelligent being. The system has so many advantages I know all wise people will adopt the reform dress and follow the lead of the architects, the one profession which makes a study of beauty, fitness and harmony."



Camp at Lake Street and Thirteenth Avenue, San Francisco, Where 1600 Houses Provided Temporary Homes for 4000 People. The Wagon in the Foreground Shows the Manner in Which the Houses Were Recently Removed by Order of the City Authorities

A Plumber's Job in San Francisco

How Thousands of Temporary Homes Were Equipped With Sanitary Fixtures and a Description of the Permanent Plumbing Work in the Home of the Aged

By G. A. B. SPENCER*

THE facts of the great disaster in San Francisco a year ago are no longer news but history, and so rapidly have events hurried onward since that it seems impossible that but a year has passed. Any aspect of it that can be presented seems to me a twice-told tale, though everyone who lived through that fearful ordeal will testify that the half has never been told, nor can it be. No pen or tongue can ever portray the horrors of that catastrophe, or overestimate its consequences. No time has been wasted in idle contemplation. Hands that were busy before have been busier since.

The genial climate made life in tents temporarily comfortable, and there were months of wholesale picnicking, but the business of a great city could not go on in such fashion.

The homeless people were encamped everywhere that tents could be pitched or shacks set up. The feeding of the multitude was a modern miracle; their transition from tents to cottages was another.

The munificent gifts from sympathetic friends, making up the great Relief Fund, and the organized efforts of the Red Cross Society in distributing it are also matters of history that may not be overlooked in any allusion to the disaster. One point that has never been widely exploited was the tremendous and immediate demand for mechanical work and the over-taxation of every facility to meet the emergencies arising.

Since the work of "rehabilitation" has loomed so large in San Francisco there have been many attempts to write it up from many different points of view, but I take it that nobody else ever sees all that the plumber sees, and no one so far has written from the plumber's standpoint.

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*Extracts of a paper printed in Domestic Engineering, May 18, 1907.

When twenty-five hundred acres of a populous city was at once reduced to chaos, the source of supply for all the Pacific States was destroyed and there was absolutely nothing to work with, of either material or tools, to be had on the Pacific Coast. The prompt action of the organization of master plumbers in other Pacific Coast cities, followed by similar gifts from the East, in sending by express tools and money to begin with, was a relief beyond expression, demonstrating the practical and fraternal character of our "association."

Everything had to be brought from the East over railroads congested with other urgent supplies. Water and gas mains and sewers were broken, and all water and gas pipes, electric wires and street railways out of commission. These were the conditions. Business firms hurried into temporary buildings with amazing celerity, and their necessities were beyond the power of the forces to be employed. But the consideration of homes for refugees had to be undertaken, and nothing less than a centralized authority, with unlimited means, was adequate to deal with it.

In the course of the summer the victims of the earthquake and fire most able to do for themselves became self-dependent, but many thousands remained who could have no hope of being able to pay rents in the city, for whom cheap homes must be provided. To meet this necessity the board of directors of the San Francisco Relief and Red Cross Funds organized a land and building department, of which Thomas Magee was chairman.

I was asked to look over the public squares and parks to consider the feasibility of their proper sanitation and facilities of connection with city sewers. The notes made in doing so afforded the data for the plans, which I very soon had ready, and which were adopted by the department.

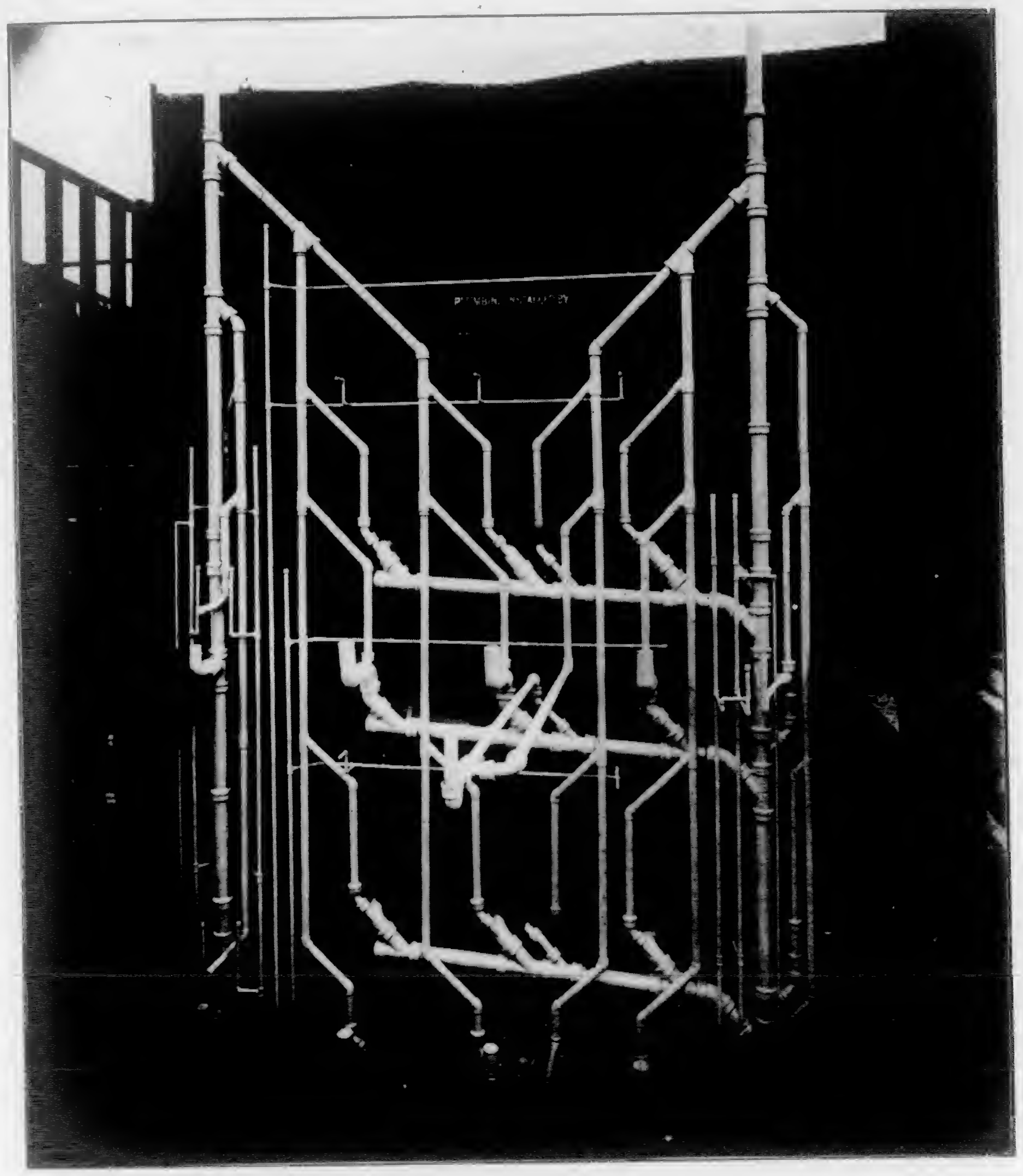
Then the squares and parks had to be regularly laid out for as many rows of small cottages as each could properly accommodate, the cottages being of one design—having two or three rooms—and at regular intervals groups of closets. Each square having a large social hall, a double cottage to be used for a business office and dispensary, and in the larger squares public laundries and bath houses.

For these extensive plans of building the plumber's work had to move in quick step.

Difficulties rose up as if the earth and all within it, and upon it, were still quaking. To begin with, the lumber trust had raised the price of lumber to rates that would seem to demand all the money in sight. Mr. Mackie, the general manager of the department, actually "took to the woods," not because he was scared, but to get behind the trusts, and there secured 3,000,000 feet of lumber, and shingles galore. Steamers were chartered to bring it to the city, and unable to get teams to haul it, men and teams had to be brought from another county, mills to be set up on the ground, and various other obstacles to be overcome.

The carpenters' union would give a card to any man who could drive a nail, so their work rushed; but the plumbers' union, more jealous of their craft, would give cards only to competent men and accepted only as such men who presented cards from affiliated unions, and though the highest wages were paid, it was impossible without unceasing maneuvering and moving of men from one point to another, to keep the plumbers' work up to the carpenters, though seventy journeymen plumbers were employed.

There were not available plumbers enough in the city. Advertising for forty men often brought us but three or four. We advertised in the papers and put up painted canvas notices, 15 by 3 feet, at prominent places calling for plumbers. On two occasions an emergency was met by accepting all the men we could get for a Sunday who were working for other firms and paying them double wages for the day, as the only way to keep up with the carpenters and have the cottages ready for use before the winter rains should set in.



Roughing in the Lavatories

Our work on these temporary buildings began at South Park, a beautiful garden spot in what had once been a fashionable residence quarter, but more recently occupied by mechanics and laborers. Nineteen apartment houses were built in this park, all sewered, with patent flush closets, water and gas in each room and hall, kitchen sinks, gas stoves, etc. The San Francisco Gas Company installed the gas pipes, fixtures and stoves in all the other parks and squares where gas is used.

The other thirteen squares and parks were used for the system of small two and three-roomed cottages, and being widely scattered, there had to be view, but I take it that nobody else ever sees all that the plumber sees, and no one so far has written from the plumber's standpoint.

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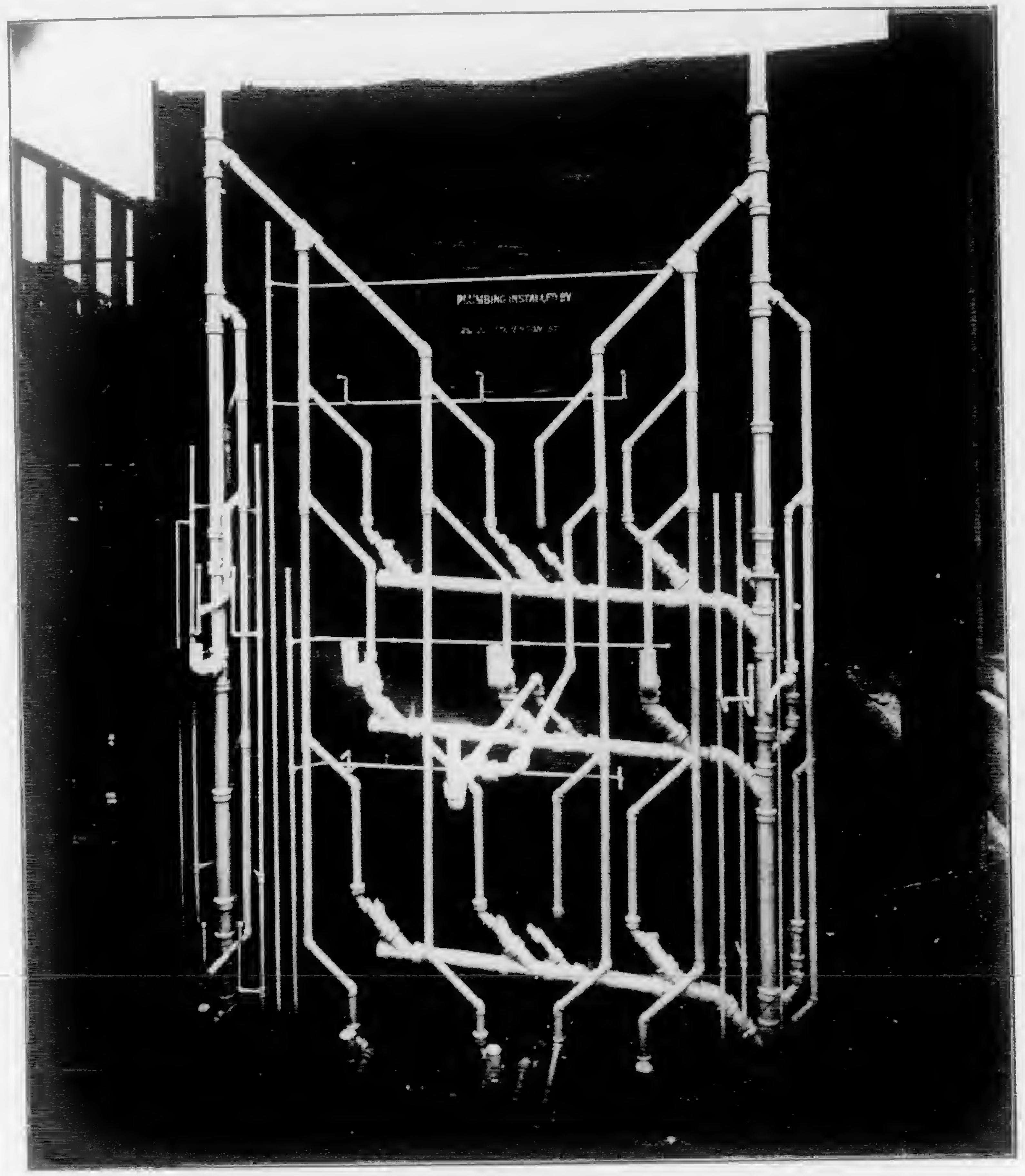

Roughing in the Lavatories

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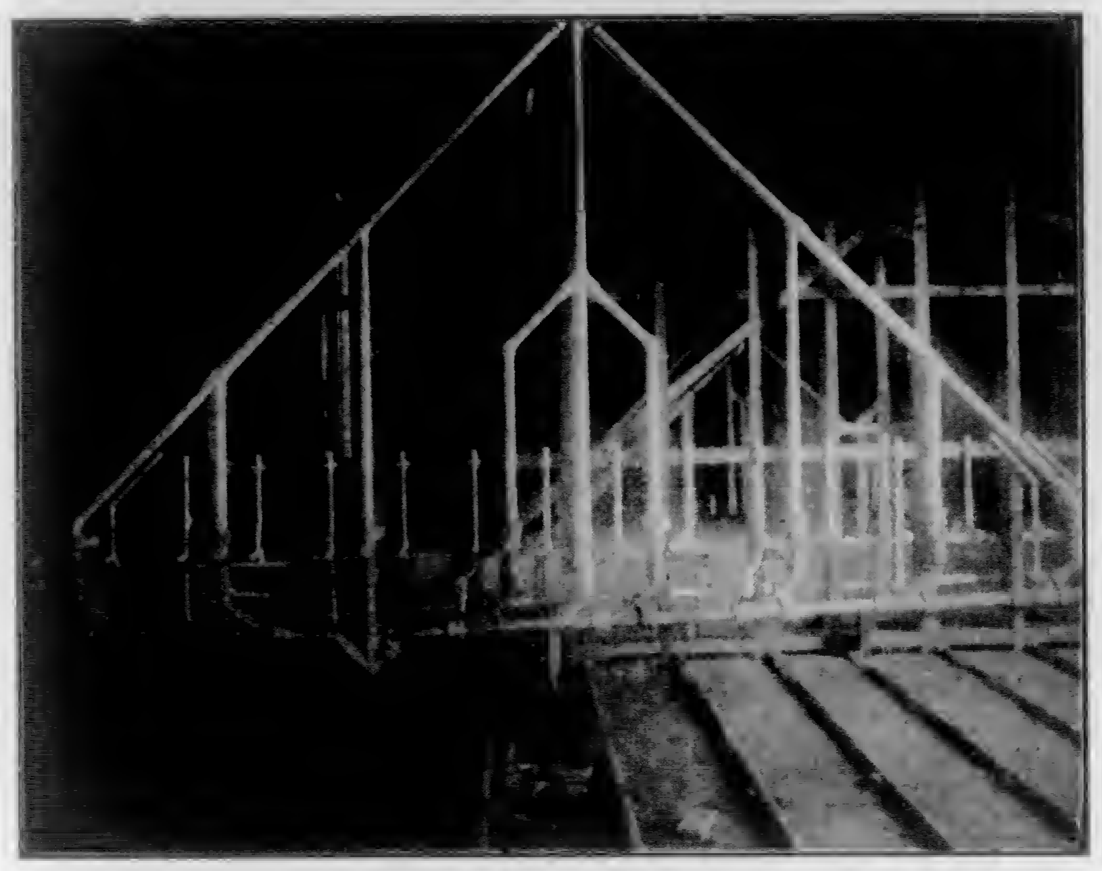


Showing the Roughing in for Eight Basins; One of Several

differences of plans to suit each location. The first sod was broken for these September 11, 1906. Five miles of sewers were laid to accommodate these cottages, and we feel justified in some degree of pride that the sanitation of these parks has been so successful. In these public squares we installed 667 patent flush closets, 247 hoppers and more than six miles of gas and water pipes, with all necessary fittings and incidentals; 325 galvanized sinks with faucets and traps were put into the apartment houses at South Park, and 624 gas brackets; 4168 three-room cottages and 1770 two-room cottages are included in this undertaking. Besides these 210 rooms and ten lofts, with kitchens for 1000 people, have been equipped at Ingleside for refugees who are not self-supporting.

These buildings are now occupied, within a year after the conflagration which made them necessary and seven months from the day the first sod was broken for them.

At South Point Lobos, a strip of land designed for a boulevard to connect Golden Gate Park with the Presidio, but not yet raised to the required city grades, was appropriated for this purpose, but having an elevation below the level of the sewers in that vicinity. To overcome this difficulty an automatic electric injector was installed, by which the drainage of 600 houses is pumped from a large cesspool, carried several hundred feet and discharged into the main sewer, involving a lift of twenty-five feet.

The larger parks are provided with general laundries, with abundant hot water for all, laundry trays, drying rooms, and all accessories. The heater for these is in the center of the building, the other half being used for separate bath houses, with enameled tubs and shower baths, for men and women.

In this brief time 30,000 people had been provided with shelter.

The extensive and permanent buildings on the Almshouse Tract to be used as a "Home for the Aged and Infirm," would also have been ready for use had not all concerned been hampered by inability to get lumber and material as fast as needed.

The plumber's part in these buildings includes an elaborate but practical system, by which both time and material were economized, a circulating system for hot water throughout, and a complete vacuum system steam heating the whole establishment, as well as the sanitary engineering necessary for the perfect sanitation, ventilation and sewerage satisfactory to the requirements

of the board of health. Standard goods have been used and all material is of the best quality. The "Home for the Aged," the first public building erected in San Francisco after the fire, with a capacity to care for 2500 persons, is a two-story structure covering a space of 600 by 350 feet, to be heated throughout by a vacuum system of steam heating, requiring 5302 square feet of direct radiation. It has 556 sanitary fixtures and 364 radiators. It will be a monument to the honor and fidelity of the building committee, of whom Thomas Magee is chairman. His watchful eye has been over every transaction, while the unbending force of character and tireless energy of Alexander Mackie, general manager of land and building department, are pushing to completion the magnificent plans of the architect, William Curlett.

* * *

The A. I. A. Schedule of Charges

By ELMER GRAY, Architect

REGARDING the remuneration of architects and the present schedule of the A. I. A. my own opinion is that this schedule should be entirely abolished. It is not a question of whether the schedule is adjusted as it should be or not, but of what its effect has been and is upon the public. As a result of its stipulating that a minimum charge of five per cent on certain classes of work be charged, and of the deplorable practice of some of its members to charge five per cent (or less!) for all classes of work, the general public has overlooked the word "minimum" and has jumped at the conclusion that five per cent is the uniform rate recommended by the Institute for all classes of work. So widespread and so thoroughly grounded is this erroneous impression that the most effectual way of correcting it would be, it seems to me, to abolish the Institute's schedule altogether. Of what use is the latter? Those who are worth that much or more and who have backbone enough to charge what they are worth, are not in need of it, and those who wish to cut rates do so anyway whether they are members of the Institute or not (and are probably not worth much more than they charge).

I would have it advertised by appearance in all the daily papers that the American Institute of Architects had abolished their schedule of professional charges because of its having created a wrong impression with the public, and also because the wide diversity of abilities among its members made it impossible to recommend a uniform rate. We should not have the principle of trades-unionism which levels all craftsmen to a common scale of remuneration, regardless of their ability, encouraged by any enactment of the American Institute of Architects.

* * *

A Handsome Cement Finish

OF THE several reinforced concrete office buildings that have been constructed in San Francisco since the fire none has attracted greater attention or received more favorable comment than the Macdonough building on Kearny street, designed by Architect William Curlett, John B. Leonard, engineer, and built by the Thompson-Starrett Company. In appearance the structure is most imposing and substantial. The exterior cement finish is particularly attractive and is the result of not a little experimenting and study on the part of Architect Curlett and his assistants. The external dressing is composed of a mixture of marble dust, white sand, cement, etc., the combination producing a clear ivory white that stands comparison with almost any other exterior finish heretofore produced. The mixture affords a very hard finish and it is claimed it will be permanent. The expense of the dressing is little if any more than the ordinary cement finish.

The National Irrigation Congress

THE threatened timber famine in the United States was one of the timely subjects discussed at the recent National Irrigation Congress in Sacramento. To all those interested in forestry it is a cheering omen that the railroads are beginning to realize their plight and fall back on commercial forestry as a solution of their timber problem. Steel ties, steel cars and concrete in many forms may some day reduce the wood consumption of the American railroads, but according to E. A. Sterling, Forester for the Pennsylvania Railroad Company, it is a peculiar fact that the use of substitutes so far has not reduced the use of wood in ship building, railroad work or general industrial enterprise.

"The Conservation of Natural Resources" was the subject of an address of considerable interest to the delegates by United States Forester Gifford Pinchot. The lowest estimate reached by the forest service of the timber now standing in the United States is fourteen hundred billion feet, board measure; the highest two thousand billion. The present annual consumption is approximately one hundred billion feet, while the annual growth is but a third of the consumption, or from thirty to forty billion feet. If we accept the larger estimate of the standing timber, two thousand billion feet, and the larger estimate of the annual growth, forty billion feet, and apply the present rate of consumption, the result shows a probable duration of our supplies of timber of not more than thirty-three years. It is evident that all the waste must, if possible, be prevented.

One of the sensations of the Congress was the charges made against the administration of the reclamation service in connection with the Owens River project. A delegation from Inyo County presented a resolution calling for a Congressional investigation.

P. W. Forbes of Inyo County, spoke vehemently upon the resolution. He claimed the people of Owens Valley had a complaint to make. He said water rights were taken away and given to Los Angeles.

Delegate Hall said rights were taken away by clients of his because it would interfere with the reclamation project. The reclamation project was abandoned, and the rights were not restored. The owners were poor men and had to sell their claim to the rights. He said thousands of acres of land without a stick of timber on them have been placed in the forest reserve. The land was good only for agriculture, but as it was a forest reserve it could not be used.

In answer to questions he said that hundreds of acres of land had been withdrawn, the project had been abandoned, but the land not restored. He claimed the reclamation service was at fault.

Hall continued excitedly and made the following charge against Lippencott:

"If it is necessary we can show that J. B. Lippencott, Chief of the Reclamation Service, was in the employ of the City of Los Angeles and the entire project was simply a plan for the benefit of real estate men of Los Angeles.

"That's the fact, gentlemen. You've got it straight from the shoulder. I never met Lippencott, and I hope I never will."

Chairman Pardee warned Hall not to indulge in personalities.

Lippencott sat in the front row but was unmoved by the charge.

Congressman Smith said the Inyo people had no feeling against Los Angeles.

The complaint of the people of Owens Valley was that the country was to be devastated of its water for the benefit of the people of Los Angeles. The Los Angeles people intend to use the water for irrigation of farms in the vicinity of Los Angeles, out of the watershed of the Owens River, leaving that land to be devastated.

Steel an Important Factor in the Rebuilding of San Francisco

By E. O. RITTER

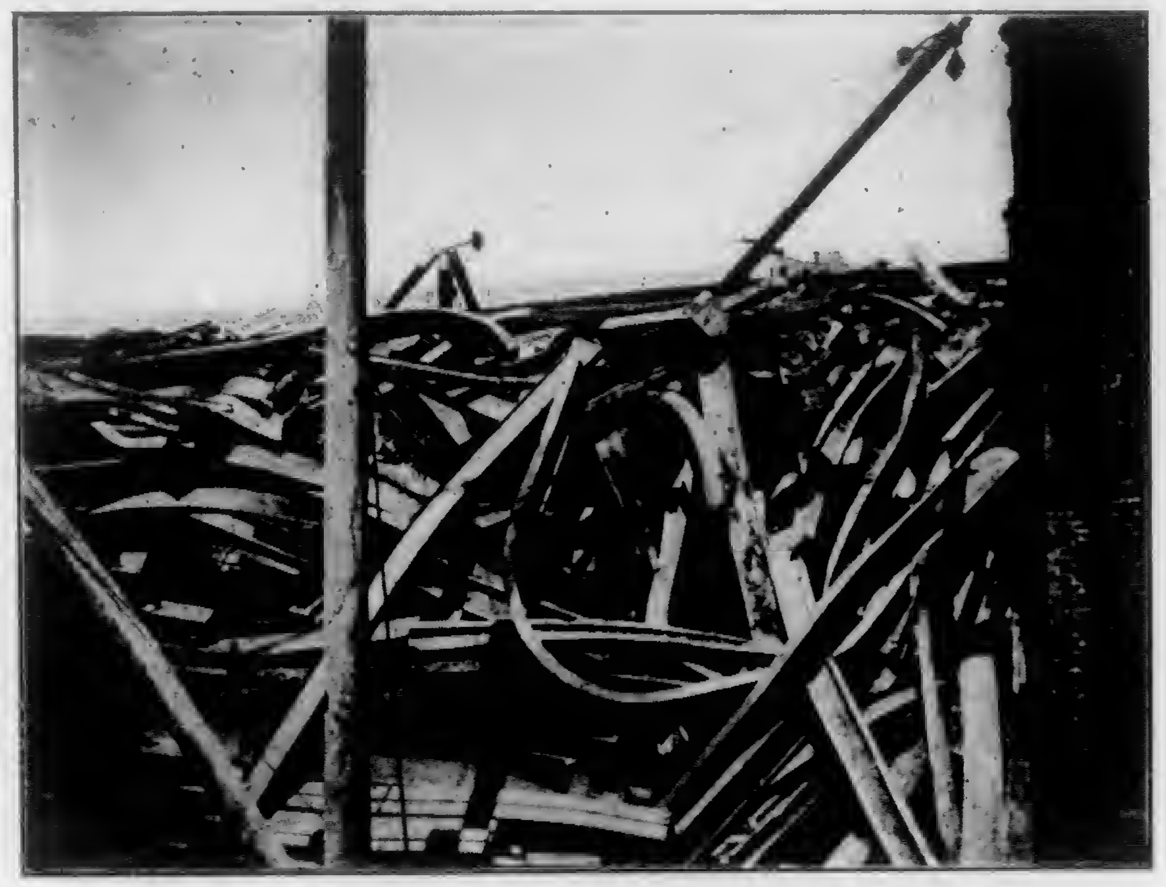


Fig. 1. Showing Bent and Twisted Steel Taken From the Old Emporium Building

ONE who is not directly interested in the building line could scarcely have any idea of the vast amount of building material that has been coming into San Francisco from outside points during the past year. Of this material a very large percentage has been structural steel and iron, something like forty-four thousand tons having been received to date. In addition to this about fifteen thousand tons of old steel and iron have been taken from the ruins, transported to various storage yards and shops and much of it is now being worked over; straightened, rebuilt or remelted as the case may be, and again put into service.

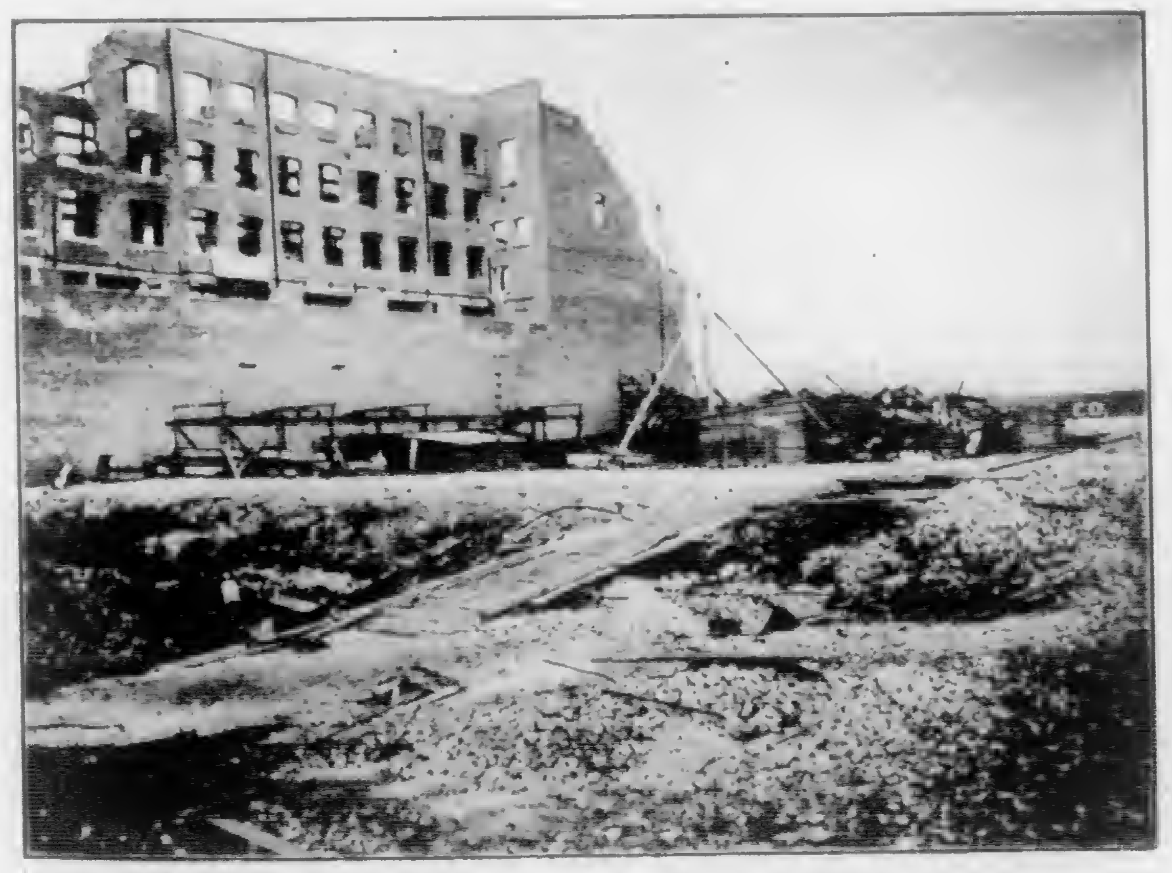


Fig. 2. Showing Wall of Emporium Building; Also, Steel Pile and Work Shop at a Distance

One of the most prominent pieces of work of this description at the present time is the old Emporium building which is being reconstructed and made serviceable again. The old steel in this building was first taken from the ruins and accumulated in a vacant lot (Fig. 1) at the west side of the building, where it was piled up with derricks, and where a straightening plant and workshop were then established, as seen in the photograph marked Fig. 2. From there the steel is again hoisted and placed within reach of a travelling crane, by which it is conveyed to the straightening and riveting machines (Fig. 3). Many pieces when brought forward were badly bent and twisted but after going through this process, came out in fair condition. Any members proving too brittle, which fact is shown by

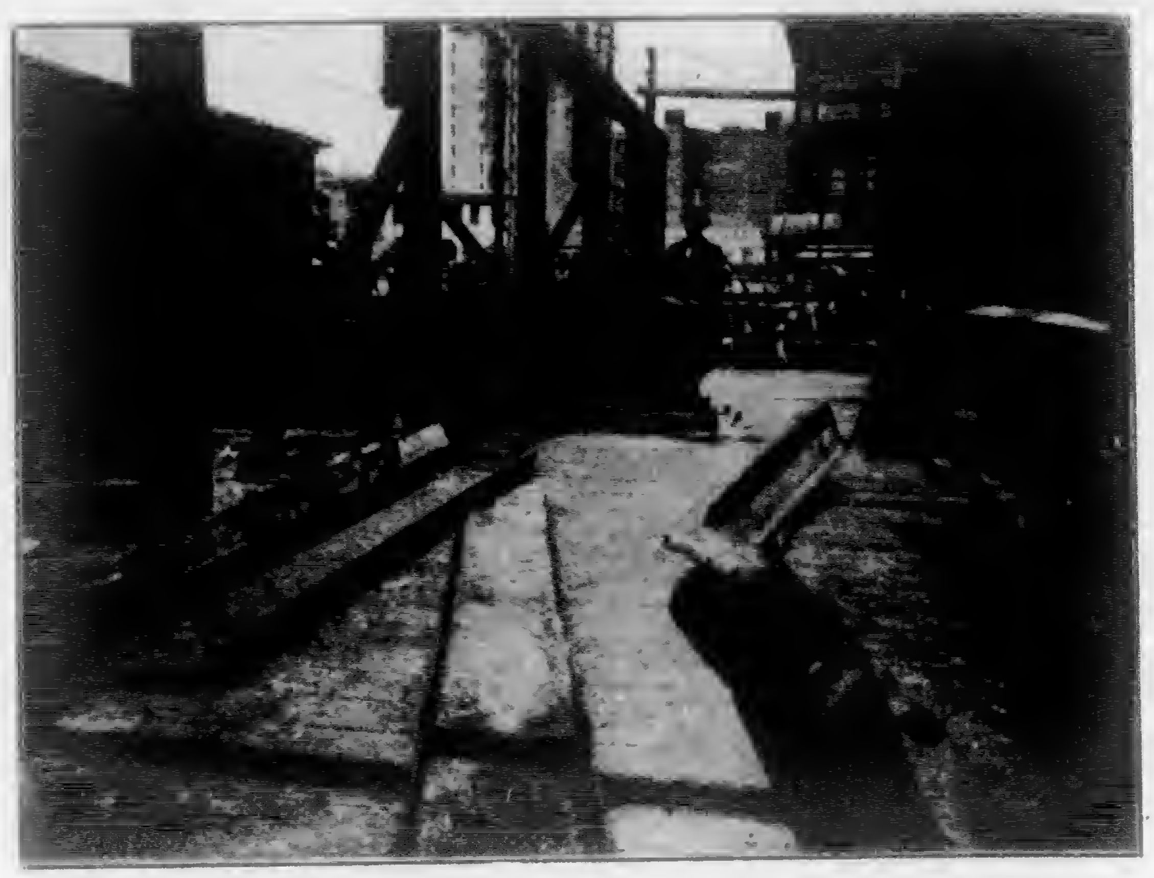


Fig. 3. Showing Straightening Machine; Also Steel Beams, Before and After Passing Through Same

the development of cracks or breaks during the straightening process, are thrown aside and used for scrap, or sometimes made use of in places where shorter pieces are required.

Beams, channels and angles are straightened without much difficulty, but in the case of built sections such as columns, trusses, plate or box girders, etc., it is necessary in most cases to cut them apart partially or wholly and then re-rivet. Much more tonnage is now being used in the reconstruction of the building than was originally designed to carry the floor loads, and in this manner, to a certain extent, it is expected the deficiency of the steel in strength will be made up in weight.

Other collections of old material worthy of mention are shown in Figures 4, 5, 6 and 7. Figure 4 shows the mountains of old steel and iron accumulated by the Judson Manufacturing Company in Emeryville, there being close to three thousand tons shown in the picture. Figure 5 is another view of the same, showing a few of the old Palace Hotel girders in the foreground.

Figure 6 is a picture of the steel yard of C. J. Tallon & Co., in San Francisco, which covered almost half a city block, and Figure 7 shows a view of the Great Western Iron and Steel Company's yard at Spear and Folsom streets, San Francisco, where there is probably one of the largest collections of scrap cast iron, etc., in the country.

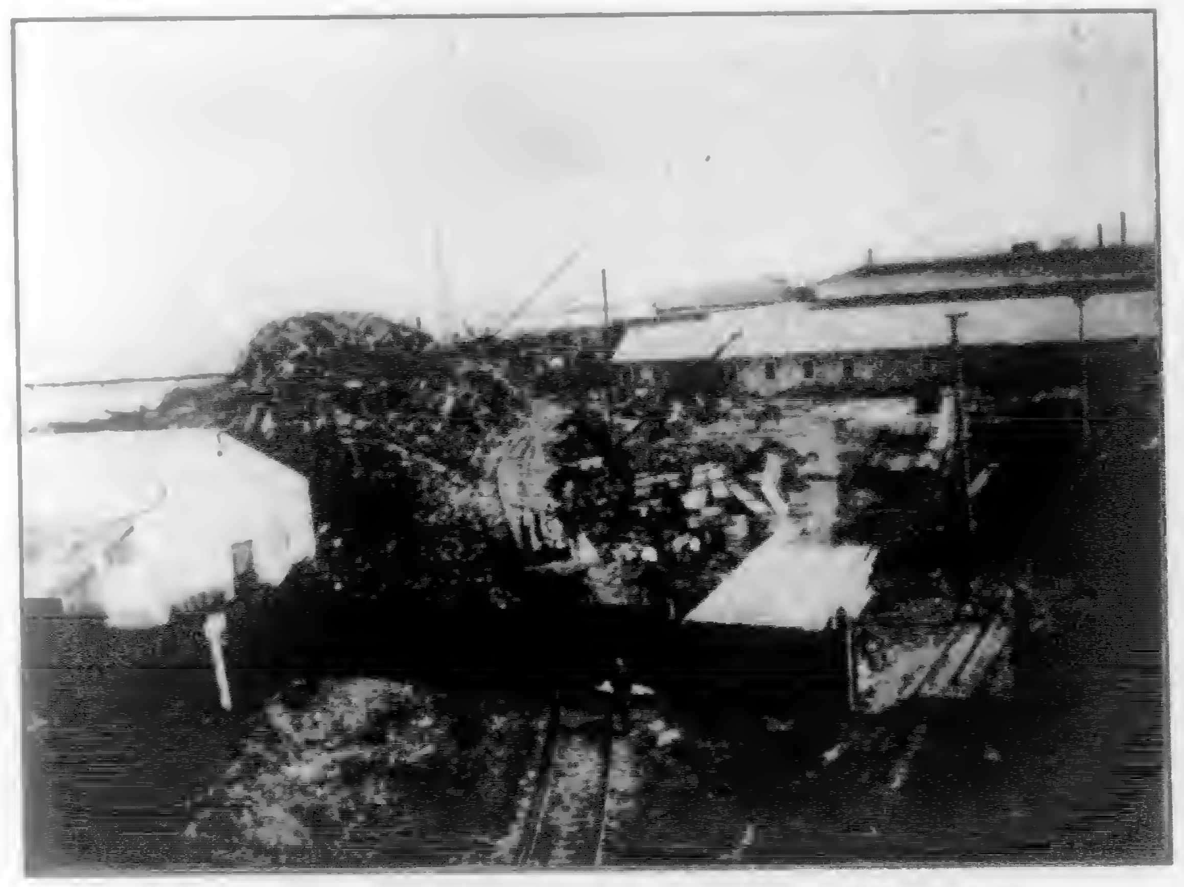


Fig. 4 Showing a General View of Steel Pile in Emeryville

* * *

Mistress—I want a girl for general housework; some one who is strong and willing and will do everything.

Bridget—Do yez take me for a Taft?

* * *

Our President, remark!
His many powers note!
For with one hand he rocks
The cradle and the boat.—Wasp.

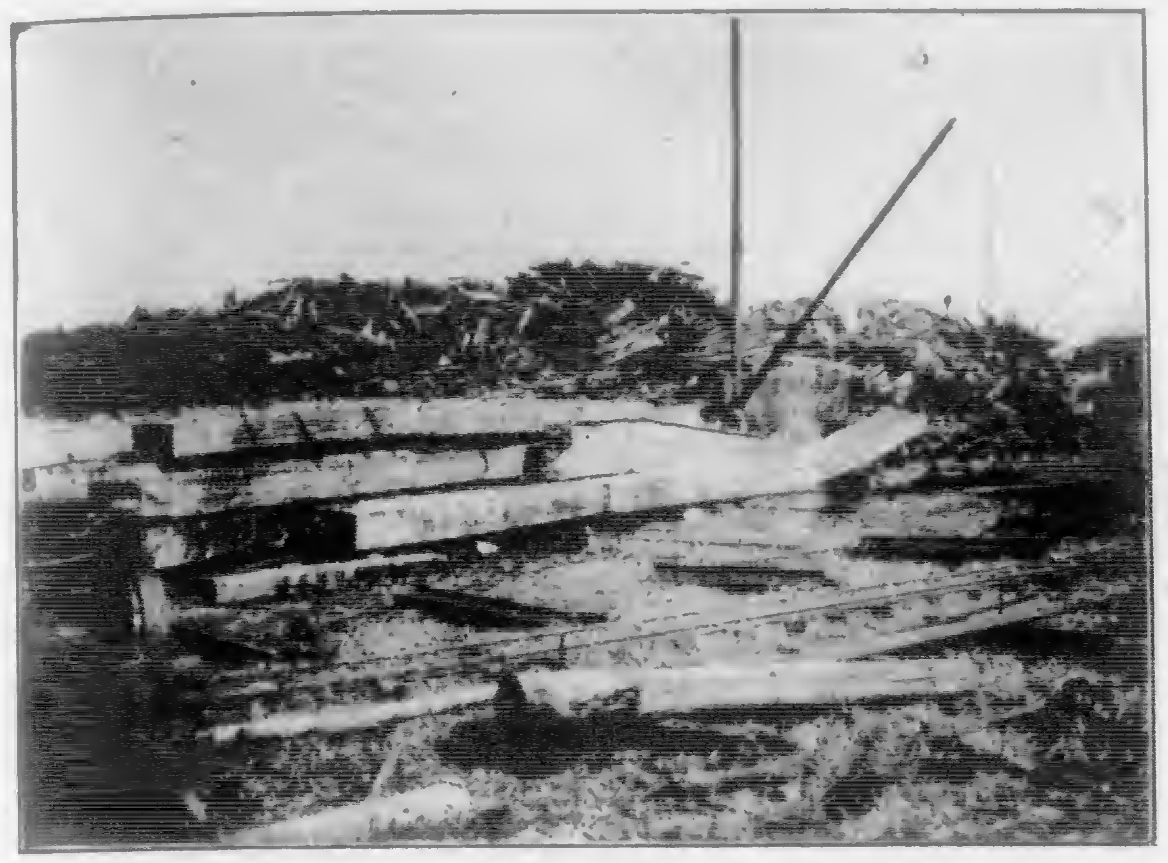


Fig. 5. Another View of Fig. 4 Showing Old Palace Hotel Girders in the Foreground

Concrete Blocks

The first great obstacle to the concrete block industry has almost entirely disappeared. It consisted of the large number of incompetents who rushed into the business upon the seductive representations of charlatan salesmen, whose sole purpose it was to unload machinery, and to collect, regardless of the purchaser's possibilities for success. As a consequence of this, at the start a large majority of those who essayed to make this kind of building material had no previous knowledge of such things, and many of them were incompetents of known record, who were misled into believing that this pronounced advance in building materials was a "get-rich-quick-scheme," which waited upon the first man in each community to commence operations.—Rock Products.

* * *

Architect's Plans vs. Builder's Estimates

The craze for cheap cottages has had the effect of making people believe that substantial buildings can be erected for small sums, and that an architect can anticipate the outlay to a penny, says a recent issue of one of the London architectural papers. A case, which was heard a few days ago in the Portsmouth County Court, suggests the effect of the belief. An architect in Fareham prepared three sets of plans and specifications for a client who wished to erect a cheap house. The defendant said that he could not expend more than £300 (about $1500) on the building, but the builder's tender was £364. Then the defendant said he could not use the plans and returned them. Afterward a check for £3 3s. was sent, which plaintiff declined to accept on the ground that the

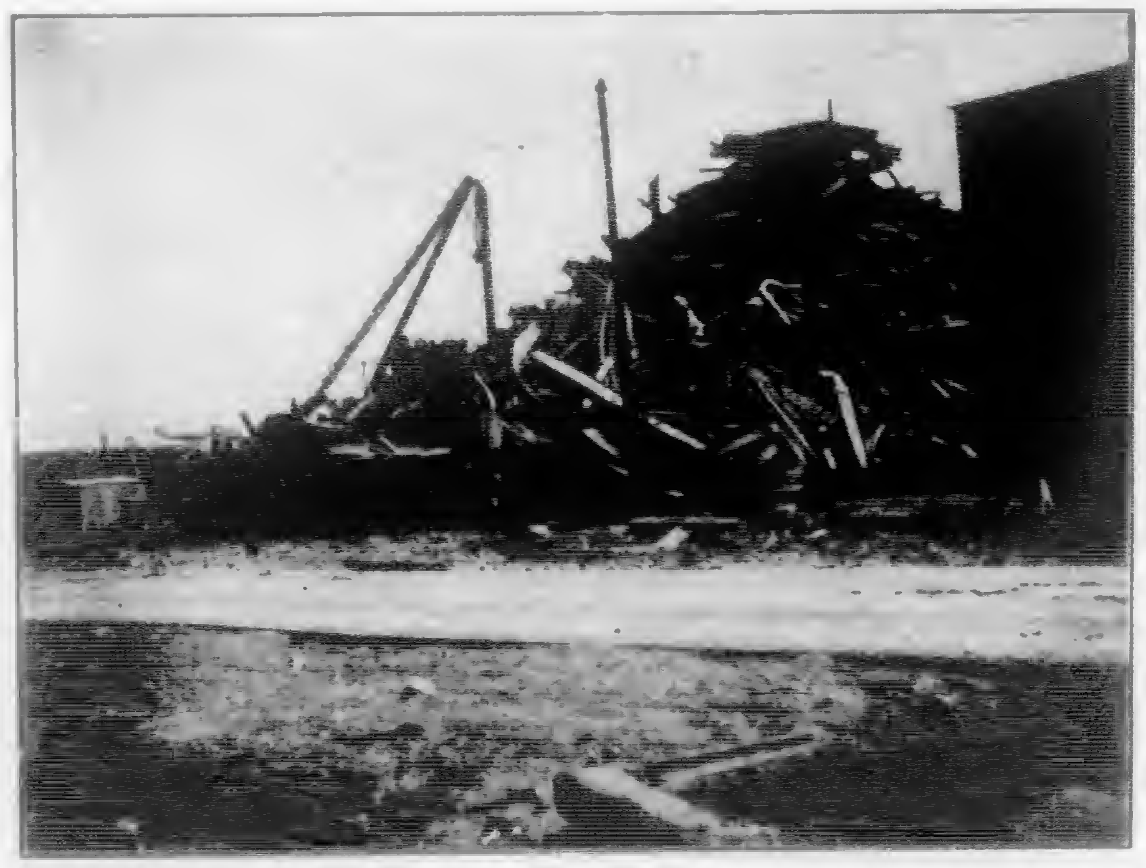


Fig. 6. Showing Pile of Old Iron and Steel Taken at Fourth and Bryant Streets, San Francisco

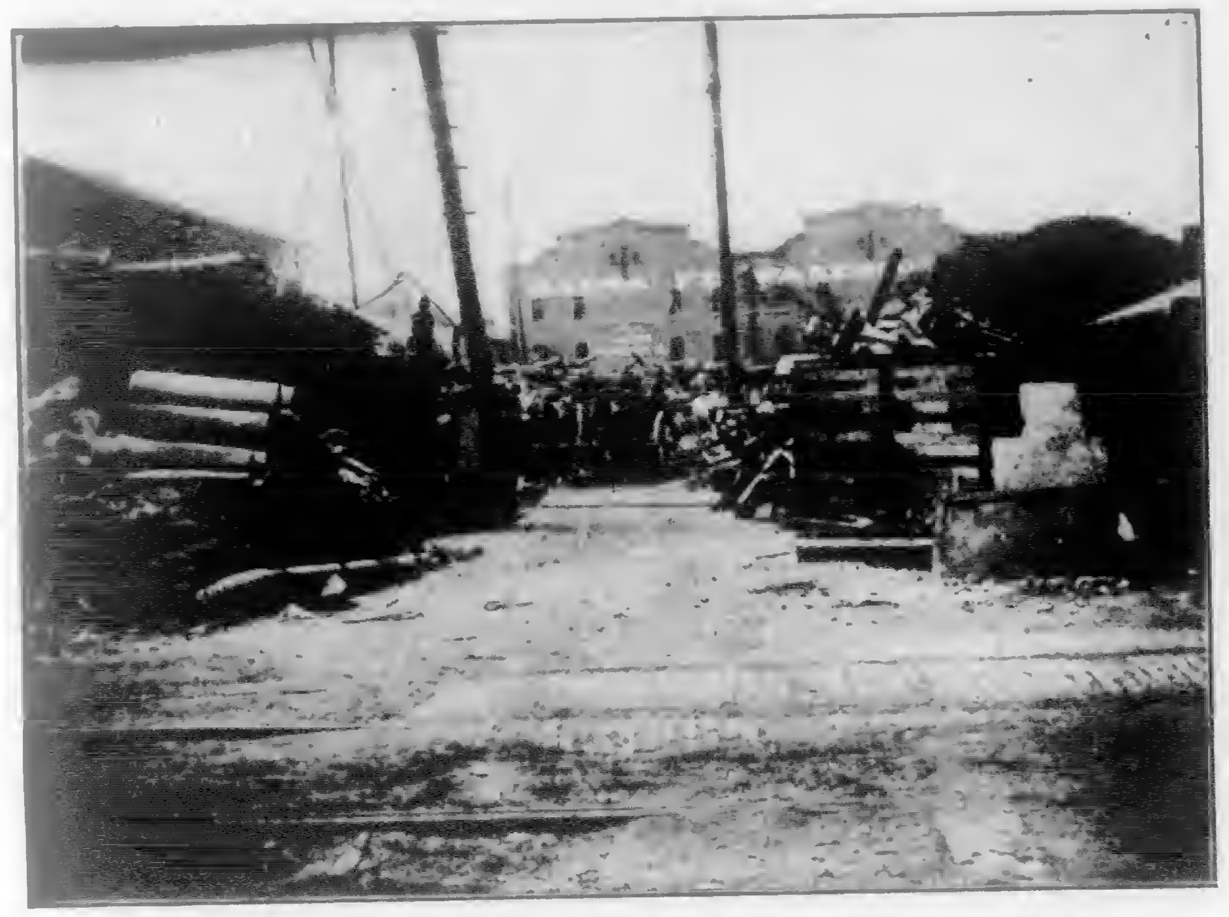


Fig. 7. Showing Piles of Scrap Iron Taken at Spear and Folsom Streets, San Francisco

amount was below the institute scale. A builder gave evidence that the cost of the house as erected from other plans was £283. The Judge decided in favor of the defendant. He considered that when a man asked for plans of a house to cost £300 it was unreasonable to plan a house that would cost £364. Such a difference was too wide to be excused. The plaintiff, therefore, not only loses his labor, but will have to pay costs. The ruling is likely to have a good effect.

* * *

An Ingenious Fire Escape

A Swiss engineer announces a new fire escape. It consists of a series of folding ladders, contained in frames, attached to the window cases, each reaching to the window below. By merely turning a small winch on any floor all these frames are pushed outward from the building, the ladders extended and securely connected with each other, thus forming a continuous communication from the top floor to the ground. The manipulation is simple and takes less than a minute. When not in use the escape is barely visible, and does not disfigure the facade of the building in the manner that the ordinary outside iron staircase does. A public test of the new escape has proven successful, and the Vienna fire brigade representatives have expressed their approval of it.

* * *

Magnate—Every dollar I have was made honestly.

Dyer—By whom?

* * *

You can push a pen but a pencil has to be lead.

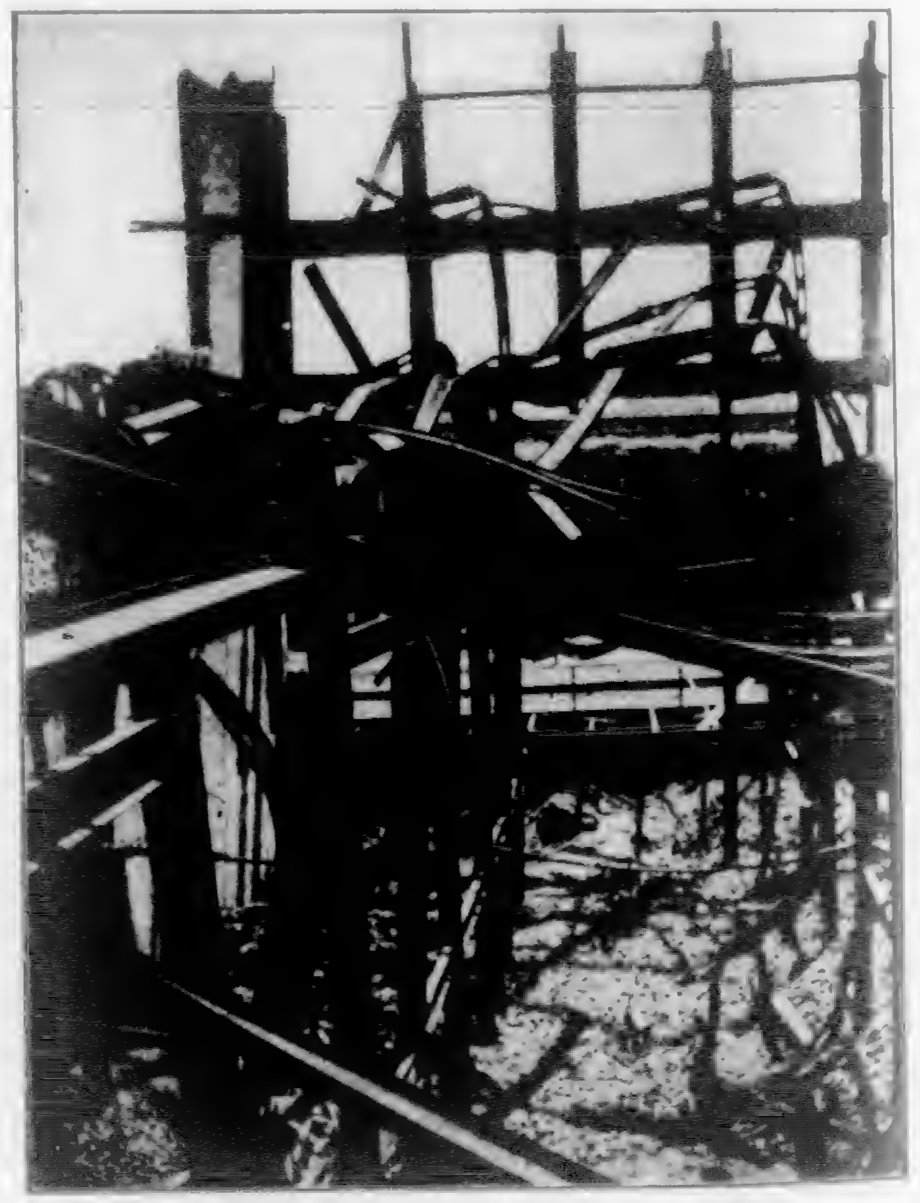
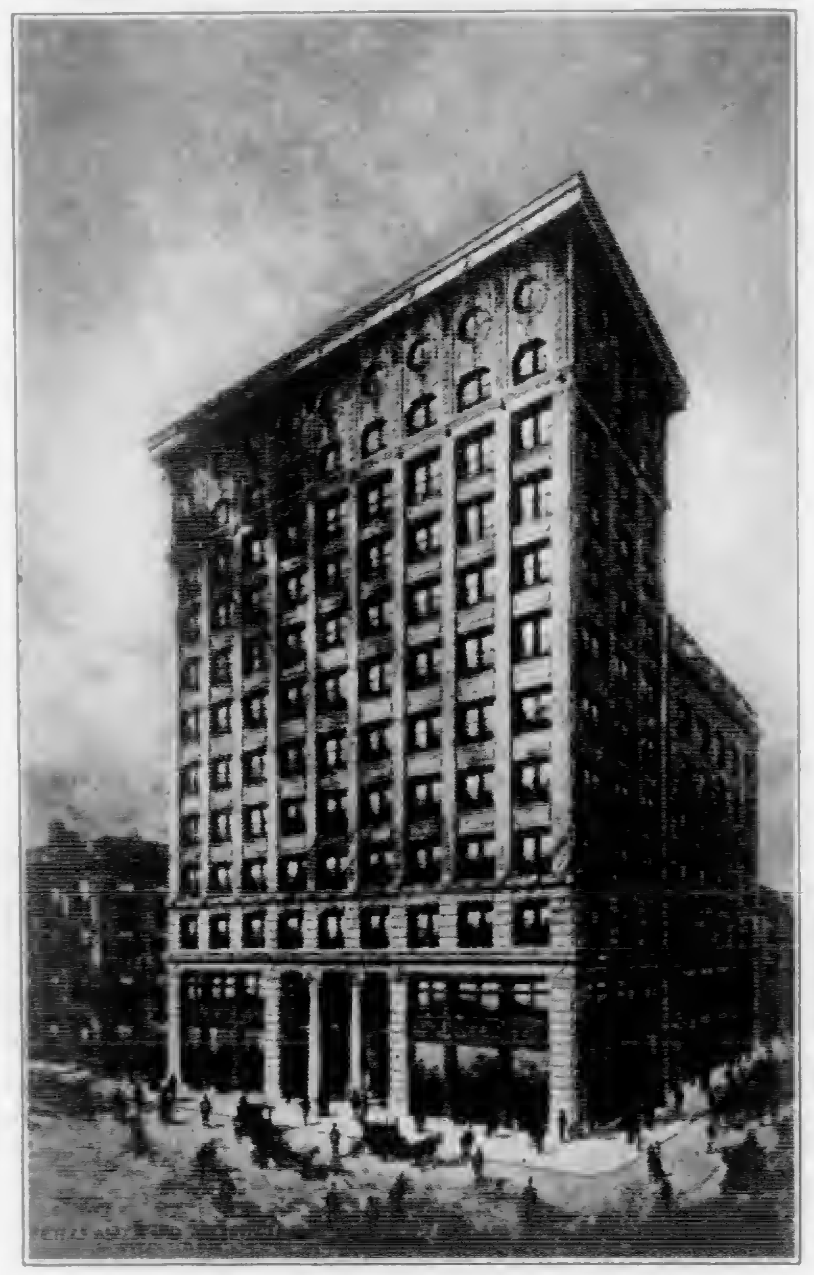


Fig. 8. View Showing the Present Condition of the Old Siminoff Building on Golden Gate Avenue

Alaska Commercial Company's Great Fire-Proof Building

OF THE several large Class A buildings now rapidly nearing completion in the banking and financial district of San Francisco, none is attracting greater attention than the Alaska Commercial Company's building at the northeast corner of California and Sansome streets. It has been pronounced by experts a model of high-class, modern engineering. The steel work is so nearly perfect that before the stone and brick facing was put on one of the big steel contractors of the city was heard to remark: "It is a shame to cover that beautiful steel frame with a lot of ugly stones and brick." When completed the building will be as near fire and earthquake proof as time, experience and money can make it.



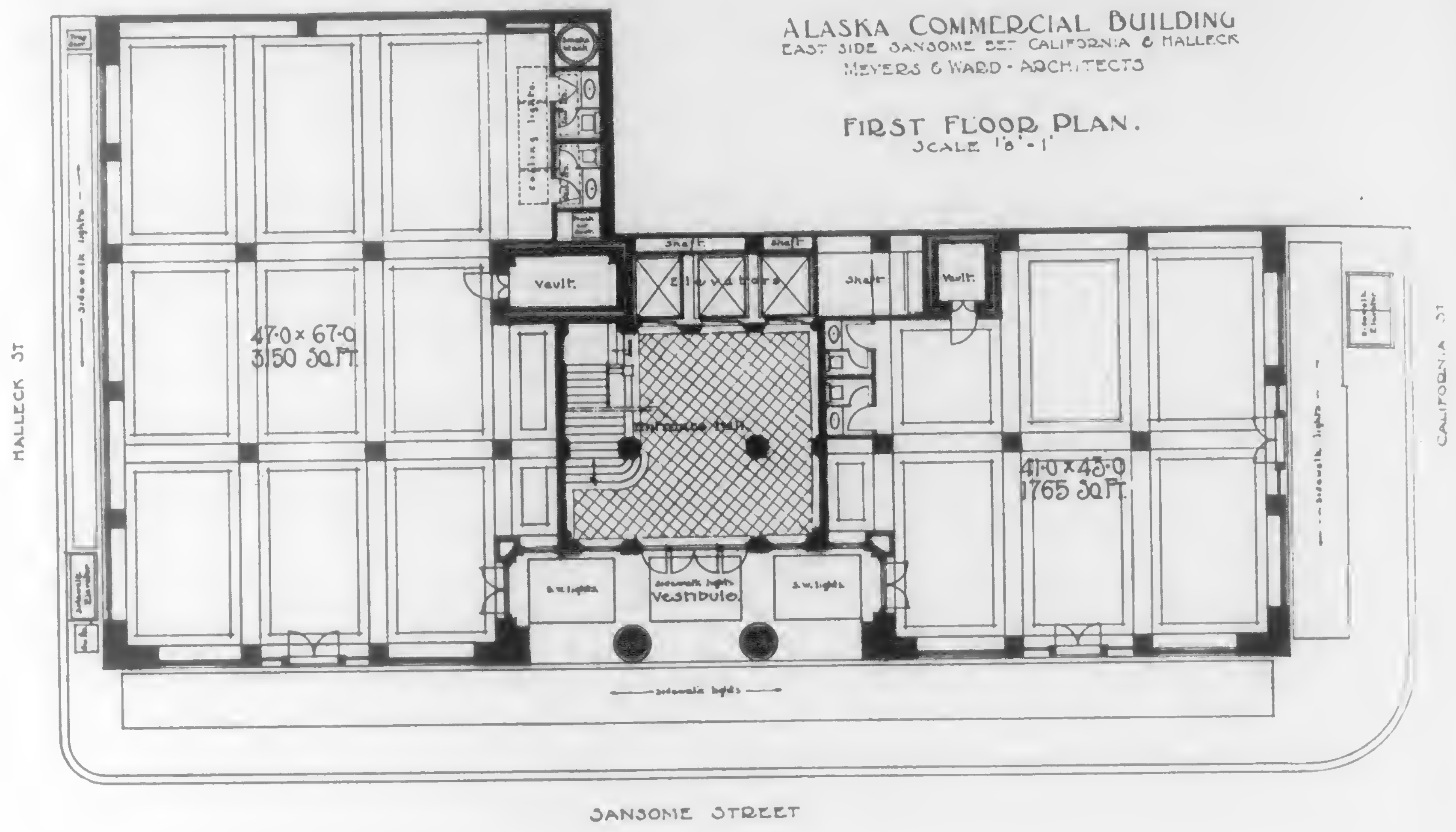
Alaska Commercial Company's Building
Meyers & Ward, Architects

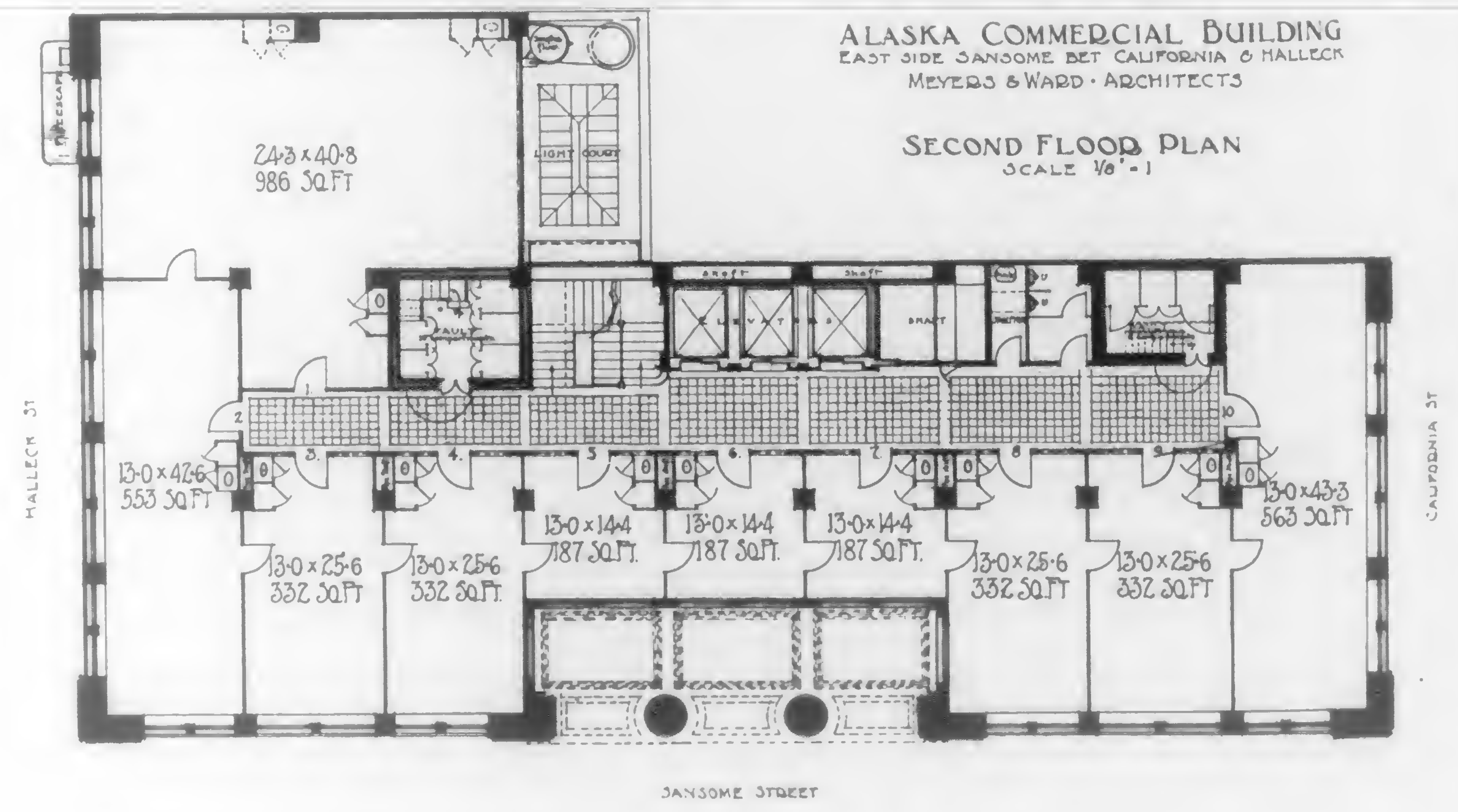
Too much can not be said of the merits of this building. It is twelve stories in height and will contain large and well-lighted offices all fronting on the street. The first three stories are of California granite, the balance being faced with gray pressed brick and ornate terra cotta trimmings. The foundation is of reinforced concrete and steel resting on piles. The steel frame is designed so as to embody all of the improvements of modern engineering. The entire building will be fire-proofed from top to bottom with reinforced concrete. The plumbing throughout is of the highest type and strictly sanitary. For fire protection there will be pumps in the basement to throw powerful streams of water to the top of the building. There will be no wood whatever in the building, floors being of concrete covered with battleship linoleum. The doors and trim throughout are of metal, and all doors and transoms are glazed with wire glass of an ornamental pattern to act as a fire retardent. All corridor floors will be tiled with marble, and marble wainscoting will extend to the top of the doors. The main entrance hall in the first story will be of richly carved marble throughout.

Meyers & Ward are the architects. The building is equipped with Otis elevators of the most improved type.

* * *

The severest punishment a man can receive who has injured another is to have committed the injury; and no man is more severely punished than he who is subject to the whip of his own repentance.





Cost of Excavating Earth

IN EXCAVATING some 25,000 cubic yards of earth for the construction of a railway siding for the Pennsylvania Railroad near Homewood, Pa., wheel scrapers and Koppel portable track and dump cars were used side by side. About two-thirds of the material was handled by the cars and the remainder by scrapers. From figures furnished by the Arthur Koppel Co., Pittsburg, Pa., and compiled by Dodge & Day, engineers, Philadelphia, Pa., the Architect and Engineer is able to give the following comparative records of the two methods of handling the material during one month when the conditions under which the car and scraper outfits worked were practically identical. The dates as recorded and furnished do not permit of any exact analysis and comparison in detail, and they are given here as partial figures only.

As the cost of handling ores is approximately the same as herein given we publish this record as of interest to the construction world in general, especially the figures on Koppel car work.

Wheel Scraper Work.—The wheel scraper work was nearly all borrow pit work, the soil being good average earth, easily plowed with a three-horse grading plow. The haul was from 150 to 450 feet and averaged 350 feet. No. 3 Western wheel scrapers were used, the number varying to suit the haul, and a ten-hour day was worked. The labor prices were as follows:

1 three-horse snap team at	$5.00
1 three-horse plow team at	7.50
1 foreman at	3.00
2 scraper loaders at	1.75
1 dumpman at	1.75
Two-horse scraper teams at	5.00

Table I shows the cost of wheel-scraper work for a period of eight days. In this table the figures showing number of scraper loads, the cubic yards excavated, and the total daily cost are those given by Messrs. Dodge & Day; the figures of average scraper load and cost per cubic yard have been computed. The column of average loads indicates that the total

TABLE I—Showing Cost of Excavation by Wheel Scrapers and Plows for Railway Siding at Homewood, Pa.

Date.	Weather.	No. of Scraper Loads.	Total Cubic Yards.	Average Load Cu. yds.	Total Cost.	Cost Per Cu. yd.
September 11.	Fair	352	141	0.401	$38.07	$0.270
September 21.	Wet and muddy	352	141	0.401	38.07	0.270
September 22.	Wet and muddy	576	230	0.399	60.70	0.263
September 24.	Fair	572	229	0.401	50.84	0.222
September 25.	Fair	528	221	0.399	59.74	0.283
September 26.	Fair	580	232	0.400	56.04	0.241
September 27.	Fair	473	189	0.399	44.07	0.233
September 28.	Fair	473	189	0.399	57.18	0.302
Totals		3906	1562	.....	$404.71	.....
Averages		....	....	0.39975	......	.....
		$0.26505*				

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* This figure is obtained by dividing the sum $2084 of the figures in the last column by eight, the number of items. By dividing the total yardage handled into the total cost we get $404.71 ÷ 1562 = $0.2584.

yardage was calculated by multiplying the number of scraper loads by four-tenths cubic yards, which, according to Gillette's "Hand Book of Cost Data," is about the average load "place measure" of No. 3 wheel scrapers.

Koppel Car Work.—The dump-car work was in a wide cut and borrow pit; the average depth was about five feet. About one-third of the material was a hard, gravelly clay which could be plowed only by a three-horse rooter plow. All material was plowed and shoveled into the cars. The average shovel gang was four men to a car. Koppel twenty-four-inch-gauge portable track was used, with the same firm's standard double side-dump cars of one cubic yard capacity each. The cars were operated in two trains of four cars each. The car dump was on a light trestle averaging about twenty feet in height, constructed of round timber cut in the vicinity. The main track from the car dump led down into the pit with temporary spur tracks, branching off over the bottom. Plowing was done on both sides of these spur tracks. The average haul was six hundred and fifty feet and a four-car train was easily handled by one horse. A ten-hour day was worked. The labor prices were as follows:

1 foreman at	$3.00
1 plow team at	7.50
1 one-horse team at	3.00
3 dumpmen at	1.65
Trackmen at	2.00
Laborers at	1.65

Table II shows the cost of the dump-car work for a period of fifteen days. In this table the costs per cubic yard have been computed and the other figures taken from the records furnished us. It may be noted here that these costs include the cost of building the trestle.

TABLE II—Showing Cost of Excavation by Koppel Cars and Shoveling for Railway Siding at Homewood, Pa.

Date.	Weather.	No. of Train Loads.	Total Cubic Yards.	Average Load Cu. yds.	Total Cost.	Cost Per Cu. yd.
September 11.	Fair	50	162	3.25	$42.70	$0.263
September 12.	Fair	55	179	3.25	48.31	0.269
September 13.	Showers	30	128	3.25	21.07	0.164
September 14.	Very wet	62	200	3.25	41.48	0.207
September 15.	Fair	58	189	3.25	41.16	0.217
September 17.	Fair	70	227	3.25	50.61	0.223
September 18.	Very hot	65	211	3.25	49.00	0.232
September 19.	Very hot	73	237	3.25	51.17	0.216
September 21.	Wet and muddy	48	156	3.25	56.12	0.359
September 22.	Wet and muddy	48	156	3.25	55.16	0.353
September 24.	Fair	57	185	3.25	44.63	0.241
September 25.	Fair	68	170	2.50	43.19	0.254
September 26.	Fair	72	180	2.50	46.18	0.256
September 27.	Fair	68	170	2.50	45.73	0.269
September 28.	Fair	68	170	2.50	56.74	0.334
Total and average		892	2720	....	$693.25	$0.2556

Note—Referring to the cost of 35.9c. on Sept. 21 and of 35.3 on Sept. 22 Messrs. Dodge and Day remark that "these were so much higher than the others that they tend to show some error in the foreman's report as turned in or else some unusually unfavorable condition. For this reason it appears fairer to leave them out altogether."

More Decisions Affecting Architects and Builders

Contract for Granite to Be Satisfactory to Architect.—Where a building contract provides that "all granite must be equal to the samples which the contractor has submitted to the owner and must be satisfactory to the architect," that "payment will be made in full within thirty days after the granite has been delivered and accepted by the architect," and that all granite not satisfactory shall be removed, even though it may have actually been put into the building, an acceptance by the architect must be proved in order to entitle the person who furnished the granite to recover the contract price therefor, unless it is shown to have been refused through fraud, such a gross mistake as would imply bad faith, or failure to exercise an honest judgment. It is entirely competent for the parties to a contract of this kind to make it a term of the contract that the decision of an architect, engineer, or other officer as to all or specified matters of dispute that may arise during the course of the work shall be final and conclusive, and that, in the absence of fraud or gross mistake, such decision will not be subject to the revisory power of the courts. Standard Construction Company vs. Brantley Granite Company, Supreme Court of Mississippi, 43 So. Rep. 300.

Liability of Surety on Building Contract.—A firm of builders entered into a contract under which they agreed to erect an apartment house. A surety company became surety in the sum of $3000 and guaranteed the faithful performance of the contract. After the execution of the contract one of the partners in the building firm withdrew from the firm, assigned his interest to one of the other partners and was released from liability on the contract for the construction of the apartment house by the other party thereto. This was done without notice to the surety company, and the company, upon being notified, refused to ratify the release. In an action brought against the surety company to recover upon a liability which accrued in the performance of the contract, it was held that the release of one of the partners acted as a release of the surety company also. The change in the personnel of the firm constituted a material alteration of the surety's obligation and discharged it from liability. The rule is that a surety is only bound to the extent and in the manner and under the circumstances he consented to become liable. Friendly vs. National Surety Company, Supreme Court of Washington, 89 Pac. Rep. 177.

Liability of Architect on Promise to Pay for Services in Securing Loan.—An architect having been employed to draw the plans for a building and to superintend the construction, offered to pay a commission to the agent of a trust company, if the latter would procure a loan from the company to the employer of the architect so as to enable him to build. The agent failed to secure the loan and the employer obtained the necessary funds elsewhere. Later the architect promised to pay the agent the sum of $175 for services rendered, and the agent sued to recover this sum. It was held that such a contract would not amount to trafficking in the profession of the architect and was not void as against public policy. While it is true that the architect was looking to the furtherance of his own interests, for he would be entitled to no compensation unless the building was erected, he was also advancing the interests of his employer, who could not build without obtaining the loan. But it was held further that the agent could not recover for the reason that he had not obtained the loan according to the agreement and the architect's promise to pay him a certain sum thereafter was, therefore, not based upon a consideration. McCrary vs. Thompson, Kansas City Court of Appeals, Missouri, 100 S. W. Rep. 535.

Some Interferences of the Architect

AMERICAN schools of architecture may be said to have passed their nonage, according to the recent report of a committee appointed by the American Institute of Architects to investigate American architectural education. This report, declares the New York Tribune, "will convince the most skeptical that, in spite of much loose talk about the marvels of European architecture and the skill of foreign architects, our own country takes the lead in an all-round comparison.

"Most flattering of all is the assertion of the committee that architecture is being taught in America with a broader view and in certain respects more effectively than in any other country, and that in a few years the education offered in this country might be looked upon as final, except for the absolutely necessary element of study and cultivation through travel and research. The Tribune is forced to confess that its joy is still alloyed by the reflection that the American patron is one whose education has not gone forward commensurately with that of the American architect, and who consequently has it in his power to defeat all that the most highly trained products of the schools can devise.

"Without depreciating in the least the great achievements and even greater ambitions of our architects, it is probably true that America is forging to the front largely because opportunity makes the man. Nowhere in Europe has there even been such an enormous volume of building going on for a long period as in the United States. The unique feature about American construction is its diversity; everything, from the smallest, cheapest cottages and tenement houses up to Newport palaces and fifty-story office buildings, has been called for and delivered. If practice makes perfect, the American architect of the next generation ought to be the peer of his most distinguished foreign predecessors. Only one small cloud in the sky warns against our uttering this statement in the form of a positive prophecy; the cloud has the form of a man who has just made up his mind to build. European architects are far less hampered than their American colleagues by clients who insist upon putting fireplaces in the butler's pantry and running a three-story veranda around their city house. Before the American can outstrip his transatlantic brethren in every respect, he must first educate a large, crude, money-spending part of the population to respect his professional judgment more than their own in matters architectural. Be it said to the country's credit, a great many persons have already learned this lesson, as hundreds of beautiful town and country houses erected during the past decade prove.

"The public will best be taught to respect the architect as an expert by having before its eyes constant reminders of the artistic and practical genius of high-grade architects. To increase the number of such designs is the first ambition of the committee. This is to be accomplished, according to the report, by the establishment of a post-graduate school where gifted students may work in close personal touch with able masters. Let us hope, though, that long before such a school shall have been established the ordinary man will at least have learned to abhor the gingerbread monstrosities and the brick boxes which still pass for houses and flats in many quarters."

* * *

Patience is the rope of advancement in all lines of life.

* * *

If the mind is clear, even in a dark room there will be radiance; if the thought is dark, at noonday there will be demons.

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

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For One Year—W. A. Boring, New York; J. M. Donaldson, Detroit; Merritt J. Reid, San Francisco.

*Executive Committee.

Next Convention at Chicago, Illinois

San Francisco Chapter of American Institute of Architects

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VICE-PRESIDENT...................WILLIAM MOOSER
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Officers for 1906-1907.

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San Diego Schools

Several new school buildings are to be erected at San Diego as a result of a sale of bonds for that purpose. They will comprise a building at Second and University avenue to cost $75,000; additions to the Middletown buildings, $60,000 and a building at Twelfth and F streets, $90,000. The latter building will contain eighteen rooms. It will have a frontage of 288 feet on Twelfth street and 188 feet on F street. The plans include a court 175 by 160 feet.

The Board of Education will commence construction work at once on a sixteen-room structure at Second and University from plans by Henry Lord Gay, architect.

Los Angeles Architects Meet

Further amendments to the city building ordinances are favored by the architects. At the last regular monthly meeting of Southern California Chapter, A. I. A., a committee consisting of R. B. Young, A. F. Rosenheim and Theo. A. Eisen rendered a report favoring the use of hollow terra cotta blocks for interior and exterior court walls and for partitions and filler walls in building construction, the thickness to be not less than one-twentieth the height of the wall. The use of hollow terra cotta blocks was also favored for residences, but not to exceed a height of thirty feet. The report of the committee was unanimously adopted.

Members present were A. F. Rosenheim, president; Fernand Parmentier, secretary; Robert F. Train, F. G. Brown, R. B. Young, Frank D. Hudson, J. Lee Burton, Timothy Walsh, S. Tilden Norton, Octavius Morgan, A. B. Benton, Theo. A. Eisen, August Wackenbarth and Julius V. Krause.

A motion was made and passed unanimously that J. N. Preston, one of the oldest members of the chapter, now 76 years of age, be made a life member of the local organization. A committee was appointed to draft resolutions on the death of E. F. Kysor, a pioneer architect of Los Angeles, and member of the firm of Kysor, Morgan & Walls.

Concrete Contractors Meet

The annual meeting and banquet of the Concrete Contractors' Association of San Francisco was held Saturday evening, August 24th, with a large number of members present. In the absence of President Keatinge the chair was filled by Vice-President J. D. Bluxome, who acted as toastmaster. He outlined the needs and obstacles which confronted the association in its efforts to assist the rebuilding of San Francisco. His remarks were received with long-continued applause.

Several other members contributed valuable suggestions and an excellent understanding was developed. John Faubel, who had just returned from an extended tour of inspection in the East, gave an instructive address on the latest methods in connection with the employment of concrete observed on his journey.

The banquet was prolonged until the early hours, and a unanimous resolution was adopted that semi-annual meetings, followed by a feast, should be held later.

Harriman May Erect Big Office Building

E. H. Harriman was kind to the reporters on the occasion of his recent visit to the coast. Regarding conditions in San Francisco, the big railroad magnate had this to say: "Nothing can keep San Francisco back. . She is bound to grow. But what is needed just now to hasten rebuilding and reconstruction is the leadership of some able, unselfish, energetic man. With so much destruction here, it is impossible for local capital to be sufficient for the work of rebuilding. San Francisco must have outside money. To inspire the confidence necessary to bring that capital here, the citizens must, by their conduct and by the reputation of their leaders, give assurance of stability and safety. Capital must have proper protection, or it will not come.

"The Harriman lines have no big office buildings in cities tributary to them. The erection of such big office buildings has been against the policy of the roads. Notwithstanding this general policy, I think that within a year, we shall have a big office building of our own in San Francisco. At least, I am strongly of that opinion now, and it will come, unless I should happen to change my mind."

A Big Loss

Grath & Duhammel, contractors for the Seattle federal building now nearing completion, will lose approximately $100,000 by the two years delay in the construction of the building, says a press dispatch. Nearly every item involved except the steel work, which is had by contract, has cost the contractors more than their estimates covered. Teamsters are being paid 60 per cent advance over the original estimates. Other advances have been bricklayers, $1.00 per day; stonecutters, $1.60; plasterers, $1.50.

A rigid government inspection has rejected enough stone to build two buildings the size of the federal building, but most of this loss falls upon the quarry. The building contractors were delayed by a regrade of Third avenue, and a fight over the acceptance of Chuchanut sandstone, both of which causes led the government to order work stopped. More than a year's loss of time is traceable to the treasury department. The building is to be completed about the first of the year.

Church of the Messiah

Architect A. B. Benton is preparing plans of a chapel building to be erected at the corner of West Washington and Van Ness avenue for the church of the Messiah. The style is Perpendicular Gothic and the construction throughout will be brick and brick and half timber. It will cover a ground space of 48 by 77.6 feet. The nave will be 29.2 by 50.2 feet; chancel 20 by 50 feet; primary department 17 by 37.6 feet; vestry 12 by 18.6 feet. The combined seating capacity of the nave and gallery is 300. There will be a basement under the entire structure and will be devoted to Sunday School room, ladies' parlor, kitchen, furnace and choir rooms, etc. The large open terraces will have cement floors. Cathedral and leaded glass windows, pine trim and a thorough system of heating and ventilating will be installed.

In addition to the foregoing there will be erected at an early date, the main church edifice which will be connected by an underground passage.

San Jose Normal School

President Maurice Dailey of the State Normal School, San Jose, is in receipt of the first drafts of the plans for the new Normal building. These have come from the office of the State Architect in Sacramento and are for Professor Dailey's approval and amendment.

The new plans show that the Normal building is to be built around a quadrangle, upon which the offices and class rooms will open. The arches which will afford entrance to this square will be in the mission style with rounded capitals. Around the quad will be corridors like cloisters, also in the mission style. The height of the building will be from one to two stories.

It is said that the State Engineering Department is desirous of commencing work on the new building as soon as possible, the intention being to have it ready for occupancy by this time next year.

New Hospital

Oakland is to have another hospital, which is to be erected in Forty-ninth street, between Telegraph avenue and Broadway. It will be known as the Claremont hospital, and is to be erected by and under the management of the Claremont hospital association, of which Dr. H. G. Thomas is the president and Dr. E. N. Ewer, health officer of Oakland, is secretary. The hospital will cost $130,000. McCall & Wythe are the architects.

Stockton Bank Building

Bids are being taken by architects Meyers & Ward for an eight-story bank building to be built at Stockton by the

Stockton Savings & Loan Society. The building will have a steel frame and will be faced with brick and terra cotta. The three upper floors will be handsomely fitted up for the Yosemite Club. The building will cost $150,000.

Architect Sues Storage Company

Architect R. C. Shindler of San Francisco has brought suit against the Bekins Van and Storage Company for $11,158.20, the claim arising out of the destruction in the conflagration of architectural books, plans, etc., which the defendant company had in storage. Shindler claimed that he paid the company $13.20 to insure the books and plans for $1000, but that after the fire the company informed him that they had not insured them. The destroyed goods were worth $11,158.20.

Architect Undergoes Operation

Thomas J. Welch, architect, member of the architectural firm of Welch & Cary, San Francisco, and known throughout the State as Grand Lecturer of the Knights of Columbus, is at Mount Zion Hospital, rapidly recovering from an operation performed by Dr. T. E. Bailly.

Popularity of Reinforced Concrete in San Francisco

(From a Leading Sacramento Daily.)

John B. Leonard, C. E., one of the best known authorities on the Pacific Coast in reinforced concrete, is registered at the Golden Eagle Hotel from San Francisco. Mrs. Leonard accompanies him. While in Sacramento, Mr. Leonard will attend the Irrigation Congress which presents some engineering problems of exceptional interest to the profession. In the rebuilding of San Francisco, Mr. Leonard has taken an active part, having designed the reinforced concrete features of no less than a score or more prominent structures.

There has been little if any concrete construction work in Sacramento, up to the present time, but those who are informed predict the early use of the material in at least one instance—the new Subscription Hotel.

"The popularity of reinforced concrete construction in San Francisco has exceeded all expectations," said Mr. Leonard, in an interview with a reporter. "At first some of the leading architects hesitated to recommend concrete to their clients, but after the possibilities of the material were made apparent by repeated successful demonstrations, those men took to it more kindly, and the result has been that there is today hardly an architect of any prominence in San Francisco or Los Angeles who has not turned out one or more substantial concrete buildings.

"The chief opposition to concrete has come from the brickmen, who see in it some formidable competition. Reinforced concrete is no longer an experiment. Failures are no more liable to occur than in brick buildings, provided the plans and construction work are carried out under the intelligent and strict supervision of competent engineers. No superstructure of any building, no matter how well built, can prevent a failure if the substructure contains faulty elements. Nearly all buildings of San Francisco have concrete foundations and in fact, had them before the fire, and as these foundations remained intact, they have carried conviction of the reliability of the material.

"Concrete buildings have failed, so also have steel and brick buildings, but in every case, the failure was traceable to a flagrant violation of the fundamental principles of construction. There is no existing data showing that a properly designed and constructed concrete building does not possess all of the merits claimed for it. It certainly offers to the investor a cheaper construction with equal or superior durability and the same income producing ability.

"There is one economic advantage in the use of reinforced concrete here in California, in that it leaves a much larger per cent of money invested in the construction of a building in our own state. The sand, gravel and rock together with the ingredients necessary to manufacture Portland cement, are all found within the boundaries of this great state, and are being utilized."

Johnston-Newman

Announcement is made of the marriage of Miss Cavie A. Johnston and William A. Newman, architect, which took place on Saturday evening, August 31st, at the home of the bride in Elmwood Park, Berkeley. Miss Johnston is the charming daughter of the late R. C. Johnston, pioneer mining man of Seattle and late president of the Alaska Development Company. She is a former student at Miss West's school in San Francisco and also of the University of Washington. Mr. Newman is a San Francisco architect, who has designed some pretty homes on Oakland side of the bay. In 1905 he was appointed by the Secretary of the Treasury as superintendent of construction and has been for the past eight years connected with the erection of federal buildings in San Francisco. He is a member of the Masonic fraternity in Oakland and a former student at the University of California.

They will be at home to friends, after September 20th, at "The Lawrence," 324 Grand avenue.

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OF CALIFORNIA

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A PLEA FOR EXPERT SUPERVISION OF REINFORCED CONCRETE

Along lines which have been repeatedly outlined and advocated in this magazine the International Society of Building Inspectors, through its executive officer, Architect F. W. Fitzpatrick, has begun a vigorous campaign for competent supervision of reinforced concrete buildings throughout the United States. We agree with Mr. Fitzpatrick that no class of construction calls for greater expert authority and to this end the International Society is making every possible effort to induce cities to appoint special inspectors of concrete and to otherwise protect the people from an indiscriminate use, by incompetent persons, of this particular type of building material.

It may not be generally known that the United States Government, through its geological Survey experts, has issued a warning to the people in a widely scattered report sent out to the press. In part the report states that the recent collapse of a number of reinforced concrete buildings, with loss of life and several hundred thousand dollars, has brought forcibly to the attention of construction material experts the need of an immediate revision of the building regulations of the great cities of the country. It is declared that inattention to this new material on the part of officials of municipalities and the haphazard manner in which it is being handled by some contractors, has led to a most serious problem and will result in more disasters unless there is a remedy at once.

The government expert declares that the danger of collapse of concrete structures exists in nearly every important city of the United States.

"I have examined carefully nearly every one of the buildings that have collapsed in the past year," says this expert, "and in every instance the fall of the structure has been due to carelessness in construction. I am satisfied that the same errors are being repeated and that further collapses will surely come unless the officials of the cities take the question in hand now. This danger of careless construction confronts nearly every city of the country and it is a miracle to me that more concrete buildings have not collapsed. In order to meet this problem squarely every city should revise its building laws in such a manner that either the owner or the contractor of a concrete building shall be compelled to employ a competent inspector, whose duty it shall be to follow every detail of the construction from the beginning of the foundation to the completion of the roof."

HOW SHALL AN ARCHITECT GET WORK?

How should an architect get his work? It is a serious question that each beginner has to ask himself. There is but one answer, and that is: he must be "known of men." But this hardly helps, as it simply causes the query to be changed so as to read: How may an architect make himself known? In a certain number of cases the answer comes naturally, and in course of time: the draughtsman who is of the right stuff to make an architect, and who has proved himself of exceptional value to his employer, is taken into partnership, and his name thenceforward becomes as well known as that of his partner. But the men who become known in this way are usually men who, though capable and well educated, have to depend on their daily wages, and so are rather forced to graduate from the bench, as it were. But there are others willing to take more risks, perhaps, more confident in their real powers, or, happily, possessed of independent incomes, who do not care to wait to be known until middle-age overtakes them, but wish to gain name and fame—and money—while young. How shall these be known?

They cannot advertise in a commercial way as can business men, since it would be "unprofessional," and such advertising as can legitimately be done on a door-plate is not likely to be very productive. If they are unwilling to adopt the old-fashioned course of establishing themselves in some new community, growing up with it, becoming known therein by daily intercourse with their fellow-citizens, and satisfying their needs as they develop, then there are only three ways open: To make an alliance with a speculating builder; to seek success by constant participation in competitions of all kinds: or, frankly, to tout for work.

According to the American Architect the first of these three methods is extremely dangerous, as it almost inevitably leads to a lowering of the moral tone and a debasing of artistic and ethical standards; the second is absolutely professional, and, in spite of the manner in which established architects talk against the method, is altogether too good ever to be abandoned. As to touting, there is much more of it done than architects will be ready to admit, for methods of touting are almost as various as men are numerous, and methods one man would employ would be scorned by his neighbor; and yet most of the methods actually used are permissible, decent and professional. The method that is at once the most legitimate and most successful is social touting, which consists simply in mixing with one's fellow-men as often and as widely as possible through membership in one or more clubs, in becoming an active member of a church congregation, and in taking part in such social functions as are accessible.

But when all is said, the best agency for becoming known—the one that has had an effective part in the upbuilding of every architectural reputation in these days—is nothing more nor less than the printing-press. It is the legitimate advertising given, without pay, by newspapers, magazines and professional periodicals.

The Publisher's Corner

A Place to Store Building Material

Contractors or members of the trade desiring first-class storage facilities can be accommodated by the North Point Warehouse Company whose office and warehouses are at Mason and Bay streets, San Francisco. This company makes a specialty of storing building materials and has over 36,000 square feet of room under cover in addition to more than one-half block of storage land. Excellent railroad facilities are provided, there being a private spur track connecting branch lines of the Southern Pacific, California Northwestern, and the Santa Fe. There are also very good wharfage accommodations. This company carries in stock some 8000 or 10,000 barrels of lime ready for immediate shipment. F. L. Lathrop is the manager.

Sullivan's Plank Holder

Architects and engineers will find much useful information in an interesting booklet just issued by J. H. Sullivan of Grand Rapids, Mich., and which is descriptive of Mr. Sullivan's Patent Steel Plank Holder, showing various methods for use in constructing concrete work of all kinds. The book will be mailed free for the asking.

The plank holder can be used in connection with any of the well known brands of steel reinforcements. The plank holders are made in two sizes, for planks 1⅞ inches thick, and for ⅞ inch boards; other sizes if desired. The size for 1⅞ inch planks are those best adapted for all classes of concrete work, where it is necessary to use planks for sides and ends. The small size, for ⅞ inch boards could be used to advantage for light contracting.

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Inspection of Structural Material

Engineers, architects, contractors and owners should realize the necessity and advantage in having structural steel for buildings and bridges inspected before shipment is made by the manufacturer.

Too much care cannot be taken in the mill to see that the physical and chemical requirements are lived up to, and the material used is free from any injurious defects, such as laminations, snakes, brick marks, pits, cinder spots, cold steel rolled in, etc., and that the specified dimensions and weights are complied with.

In the shop the work should be supervised during marking, punching, reaming, assembling, riveting, machining, cleaning, painting and weighing. By detecting errors and rectifying them in the shop serious delays and great inconveniences are avoided, especially when consideration is given to the fact that the material has to be transported 3000 miles, and if errors are not discovered until arrival at destination, it will readily be seen that the delay thus caused would be a very serious item.

The American Bureau of Inspection and Tests, whose general offices are in Chicago are prepared to inspect this class of material.

They have inspectors stationed at most of the important mills and bridge shops throughout the country and are in a position to handle orders of any size at a minimum cost to their customers. Woods & Huddart of No. 11 Front street, San Francisco, are the agents for this company.

Carbonizing Coating

Carbonizing Coating can hardly be classed with paints; it is something more. It has given protection where ordinary good paint has completely failed. Why? Because it is made of chemically pure materials, and manipulated in such a manner that uniform and reliable results are obtained. The vehicle is chemically pure linseed oil, with which are combined time-tried staple pigments; the combination cannot be other than durable.

Carbonizing Coating Is made for one purpose only, viz., the protection of iron and steel from rust and corrosion. It is adhesive, and completely seals the metal from moisture and other oxidizing influences. It is not a new "patented" product, but one that has been in use for years, demonstrating its value as a protective paint.

The McCormick and Henderson Company, with offices at 110 Bush street, near Kearny, are the San Francisco agents for Carbonizing Coating and they have also taken the agency for an office building directory of the most improved pattern.

Hamilton Grate Company Moves

The Hamilton Grate Company has removed its Oakland office and factory from 177 and 179 Twelfth street to more elaborate quarters at 271-273 Twelfth street. A fine large display room is a feature of the new quarters. The company has established a San Francisco office at 430 Monadnock building. A steady increase of business necessitated the above mentioned changes. William C. McGeorge is manager of the sales department.

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Prominent Cement Man Returns

Max Goldsmith, vice-president of Maldonado & Company, whose San Francisco offices are in the Hansford building, 268 Market street, has recently returned from a trip abroad. He was agreeably surprised to note the headway made in rebuilding the city during his absence. In no one city in the world is there so much reinforced concrete construction going on as in San Francisco, he says. While abroad Mr. Goldsmith visited all the great cement plants which he found taxed to their capacity. The local consumption of cement has exceeded all expectations and in consequence foreign cement is likely to be much higher here next year. The cement being sold here now is largely an accumulated stock and was shipped when there was less demand for it at home. Mr. Goldsmith says it is unfortunate that the authorities have allowed to be shipped here several cargoes of poor cement which had been rejected in Europe. This cement has been used in San Francisco buildings and experts have predicted serious trouble at no distant date.

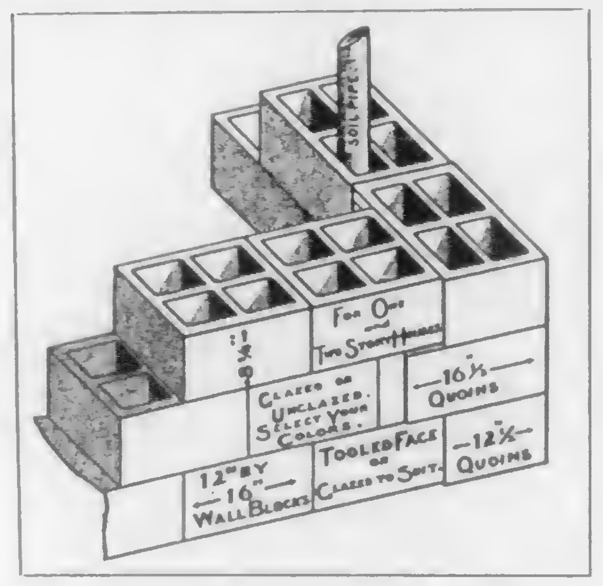
The two brands carried by Maldonado & Co. are the Lion and the Hammonia. The latter was used in the Fairmont Hotel and the Lion is being used exclusively in the construction of the big apartment house designed by Architect Frederick Noonan and being built on Sutter street, near Polk, San Francisco.

The Ettler System of Concrete Reinforcement

Architects and builders have manifested considerable interest in the construction of the Owl building on Mission street, near Second, San Francisco. The Ettler system of reinforcement is being used and the author explains its merits and advantages in a letter to the Architect and Engineer, as follows:

"The form of mesh in the network of steel is triangular, which can not be distorted. The bars of which the network is composed are flat, punched at regular intervals and are nailed together at the intersections. By this method internal stresses in the concrete are obviated. The steel work can be erected altogether in advance of other work and does not need immediate filling of concrete, as the same forms a complete unit and stands well alone.

"The construction remains open for inspection for several stories and defects can not escape detection. In the filling in of concrete, a disarrangement of the meshes is imposible in this system."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Mr. Ettler says his system has been approved by some of the most eminent authorities in the world, including Prof. T. Nakamuro, a prominent engineer of Japan.

Ornamental Plaster Work

J. E. Manetta, the well-known sculptor and stucco man, has taken into partnership Mr. Callahan whose experience in the same line of business has covered several years. Both have been eminently successful and under the new firm name of Callahan & Manetta they are likely to enjoy continued prosperity. Important contracts for ornamental plaster work and modeling recently taken by the firm include the Italian-American bank, John Galen Howard, architect; the Mercantile Trust Company's building, Albert Pissis, architect; the Bank of Italy, Frank T. Shea, architect; and the Palace Hotel, Trowbridge & Livingston, architects. Mr. Manetta had the contract for all the elaborate stucco work on the new pavilion and casino at Santa Cruz, William H. Weeks, architect, and also the interior of the remodeled Hotel Vendome in San Jose. The new firm has arranged to open a down town office at an early date, retaining the studio and workshop at the foot of Bay and Fillmore streets, San Francisco.

State Fair Exhibits

A number of our enterprising advertisers made very creditable exhibits at the State Fair in Sacramento. The Henshaw-Bulkley Company had a big display of road tools, sprinklers and the Otto gas engines. Baker & Hamilton showed the Peerless gas engine, Simplex separators and the Burrell milking machines. Julius Beeman was in charge of an Alamo engine which attracted considerable attention.

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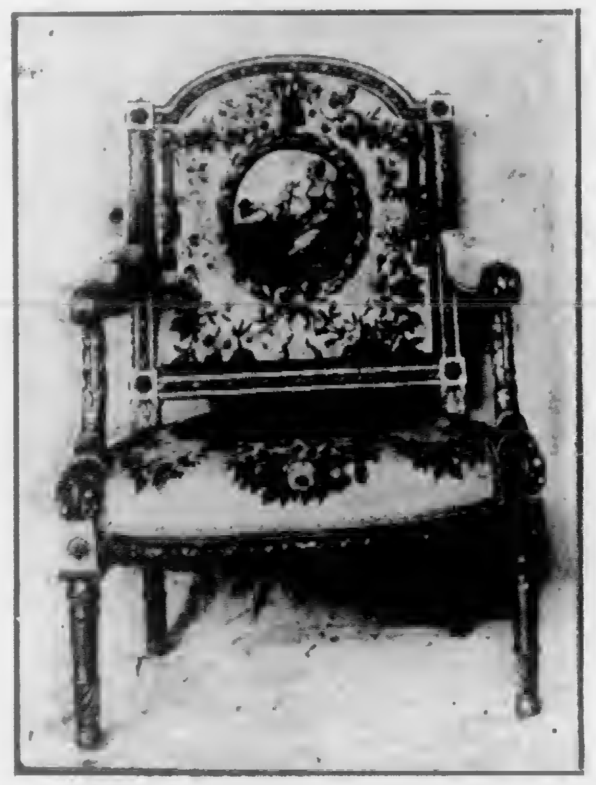

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While today a great deal of wood work is still finished natural, a large portion is stained in various effects. Depending on the character of the finish desired, different stains are used with which it is possible to obtain almost any color.

All woods can be finished in such a variety of beautiful and artistic shades, that the architect has almost as many colors to choose from in stained wood effects as in paints.

In addition to this there are various finishes now in general use, such as varnish finish, which may be left in the gloss or rubber flat; or the mission finish—a flat waxed effect.

Where light colors are wanted, the wood filler may be tinted to the proper shade. For darker effects it is necessary to use stains in order to get the desired color and at the same time not cloud the figure of the wood.

The variety of beautiful and artistic effects it is possible to obtain on all wood, whether it be ordinary pine, birch or the finest mahogany, is a revelation to any one who has not looked into the subject and who does not know the possibilities in wood finishing.

There are few woods which "take" stain so well as California redwood and Oregon pine, and when properly treated these woods can be finished in a very attractive manner.

Every architect and builder who is desirous of thoroughly acquainting himself with the progress of the art and familiarizing himself with the many new shades that have been introduced, will be very much interested in an exhibit of finished woods which is shown in the offices of the Whittier Coburn Co., Los Angeles and San Francisco, where large finished panels of California redwood and Oregon pine, together with various hardwoods can be seen. It has been said of these panels:

"We are very much pleased with these samples, and in our estimation they are the finest of anything of the kind that has come to the coast."

"We consider these samples the most handsome, most effective and sales producing samples of this kind that have ever come to our attention."

The panels have been furnished by the Bridgeport Wood Finishing Co., manufacturers of Wheeler Patent Wood Filler, an article recognized by all architects as essential in preparing the proper foundation for finishing wood.

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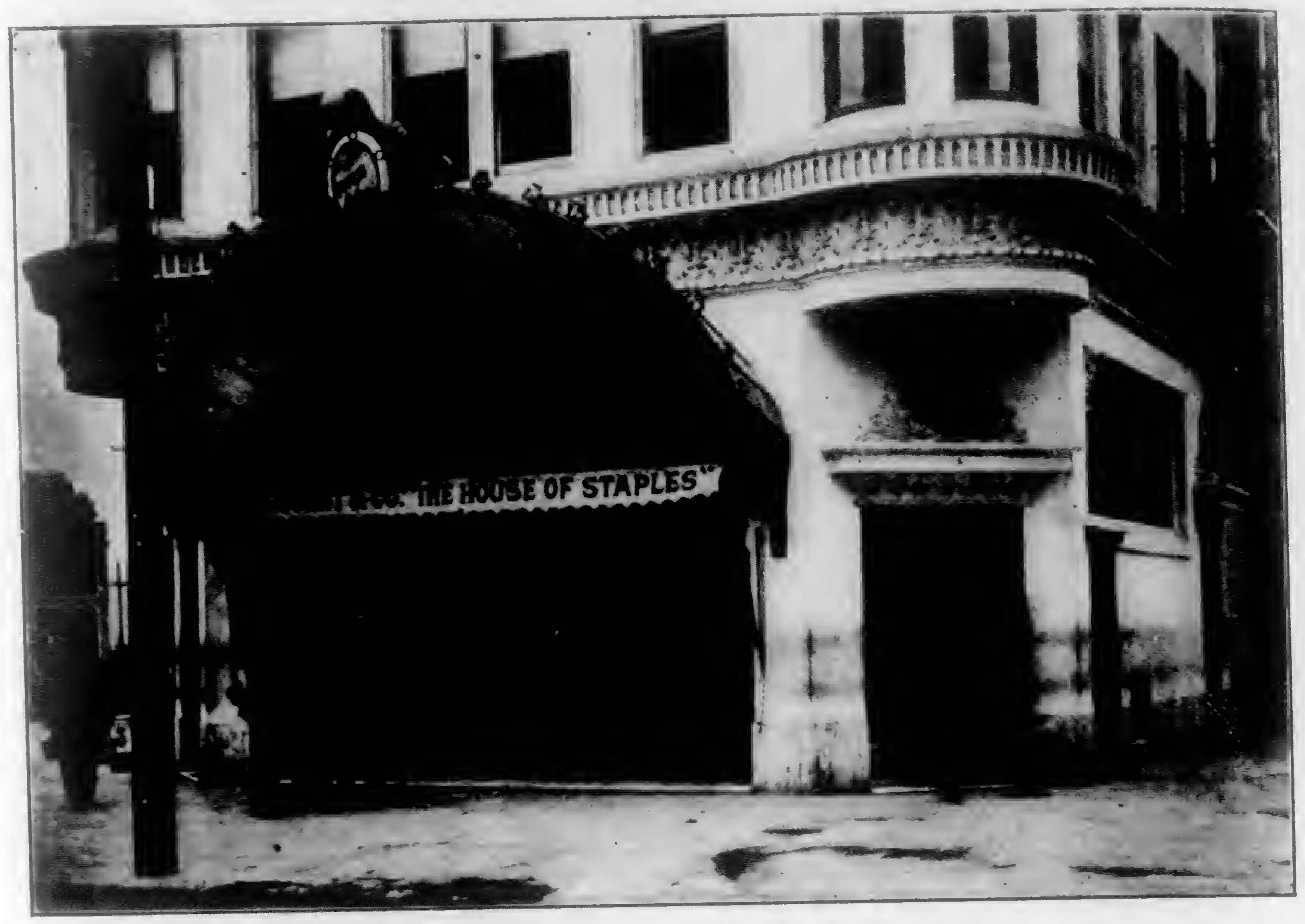

Detail of Flannery Building
Art Metal Canopy by Chr. Deterding Concrete Work by Victor Stanquist
Ornamental Plastering by D. Ross Clark

Bars for Reinforced Concrete

Gilhuly & Ambler report an improvement in business the past month. This firm is located in the Atlas building at 604 Mission street, San Francisco, and handles the fabricated structural steel in addition to an excellent line of high carbon steel bars for concrete reinforcement. A number of good size orders for the carbon bars have been taken by this firm the past month largely on account of the excellent satisfaction the bars have given in buildings already erected.

Keuffel & Esser in New Quarters

The San Francisco store of the well-known firm of Keuffel & Esser, dealers in architects' and engineers' supplies, drawing materials, etc., is now located at 48 and 50 Second street. The new location is not only more convenient but the accommodations are much superior than those afforded in the old quarters at 40 Oak street.

Praise for Chr. Deterding

The handsome ornamental awning in front of M. Gunst's store in the Flannery building is receiving much favorable comment. It is an artistic bit of workmanship and Chr. Deterding, from whose art metal works the canopy was turned out, is naturally elated over the many words of praise his efforts have occasioned. Mr. Deterding makes a specialty of bank fixtures, elevator grilles, art forgings and hammerings. His shop is at 67 Clementina street, San Francisco.

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Interior of Studio and Display Room of J. Fred Jurgewitz, Staff and Stucco Work, Oakland

American Pacific Company

The American Pacific Construction Company has moved its executive office to the Pacific building at the corner of Fourth and Market streets, San Francisco. This company is putting up the Pacific building and both the contractors and the architect, Charles F. Whittlesey, are constant recipients of congratulation for the speed and excellence with which this great enterprise has been carried on. The Pacific building has been truthfully termed the largest reinforced concrete building of its kind in the world.

The Spencer Desk Company has taken the contract for supplying the pews in the new First Presbyterian church in San Jose. The seats are to be handsomely carved and polished.

Fireproof Partition Walls

Architects and owners desiring to use first-class fireproof partition walls in the construction of fireproof buildings would do well to investigate the Hudson patent block which is being installed in the Fairmont Hotel by the Hudson Patent Block Company. The block is not only fire proof but is sound proof and germ proof and can be used at moderate expense. The system saves time and space and can be papered or distempered immediately after erection. Mr. Hudson will be pleased to call on any architect and explain the merits of his block upon receipt of a letter or postal inviting him to call or a personal investigation of the system may be made at the Fairmont Hotel.

A Clever Piece of Staff Work by Mr. Jurgewitz after Design by Stone & Smith, Architects

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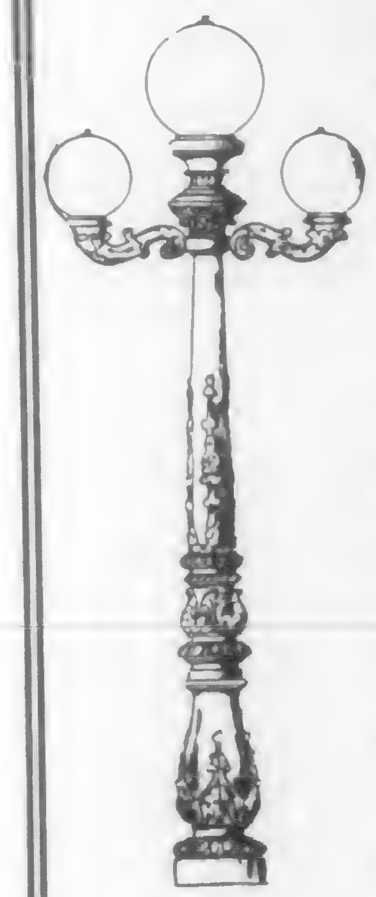
Opens Pacific Grove Branch

The Globe Electrical Company of Monterey has established a branch at 212 Forrest avenue, Pacific Grove. A fine line of electric fixtures will be carried in the new store besides an assortment of art goods for interior decoration. The Globe Company has wired practically every new building put up in Monterey and vicinity this year.

L. E. Stanhope, who has been representing the firm of Holabird & Roche, the well-known Chicago firm of architects, in San Francisco since the fire, has gone East on a few weeks' business trip.



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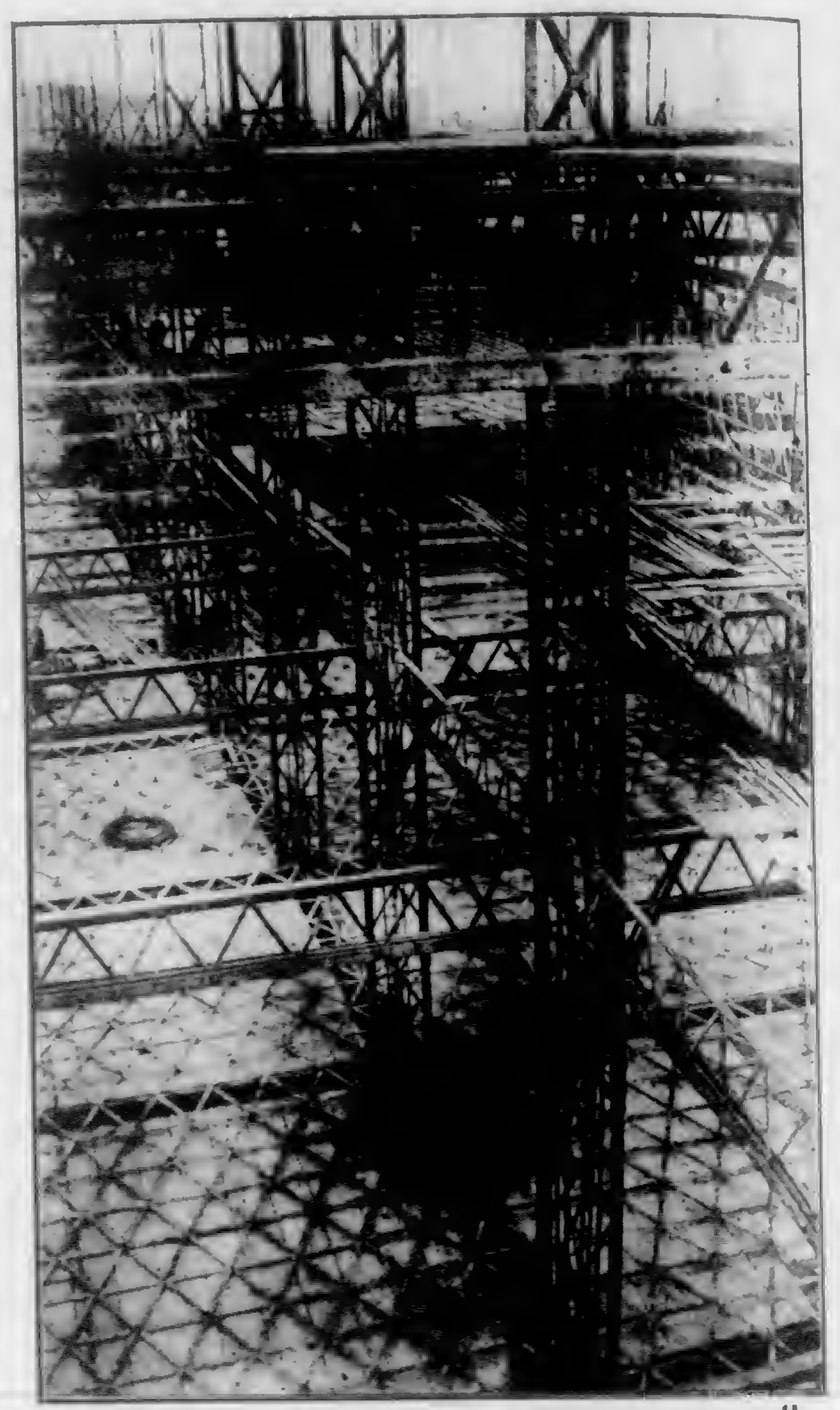

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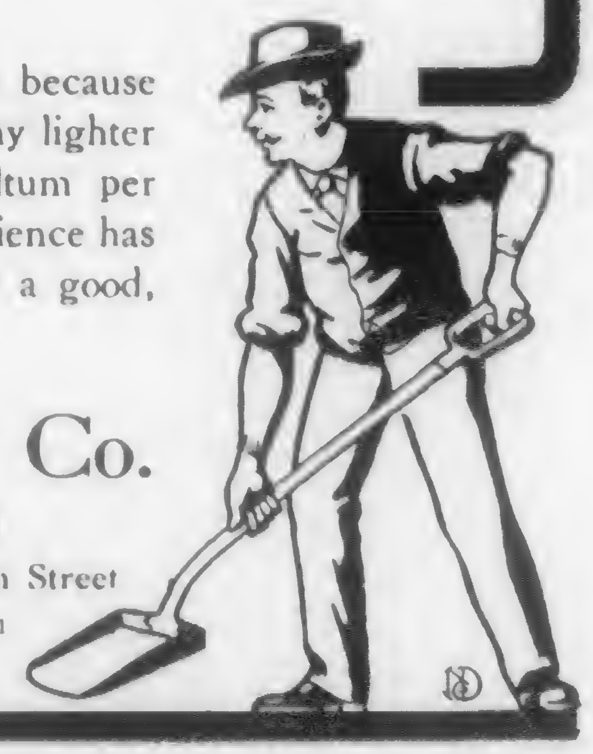

The A. W. Reiber Company

The friends of Mr. A. W. Reiber, for five years head of the decorating department of the John Breuner Company, will be pleased to learn that he has branched out for himself. Associated with him, under the name of the A. W. Reiber Company, is Mr. W. C. Colson, a man of high business standing. With the ample capital which the firm enjoys, coupled with Mr. Reiber's wide experience, success would seem to be theirs from the start. Handsome quarters have been leased by the company at 1607 Broadway, close to the new Key Route Inn. An exceptionally large stock has been put in, Mr. Reiber having spent several weeks in the East selecting the assortment. The firm will carry the following lines, all of which have been gathered from the best sources in America and Europe: fabrics, wall and floor coverings, draperies and hangings, gas and electric fixtures, hardwood floors, imported and domestic rugs, art glass, etc. The aim of the company is "to attain the highest expression of art in home furnishing and to encourage an artistic appreciation."

Mr. Reiber is best known on the coast by his successful efforts in the decorative line, while with the John Breuner Company of San Francisco. During the five years he was in Mr. Breuner's employ Mr. Reiber supervised the furnishing of some of the finest homes in California including the residences of Mrs. Hermann Heynemann, Dr. O. C. Joslen, Mrs. S. Greenbaum and Mrs. L. W. Sanborn, San Francisco; J. H. Hunt, W. W. Garthwaite, and A. J. Snyder, Oakland; J. L. Chaddock, Mrs. O. E. Morris, Berkeley, and Dr. Robert Dunn, Piedmont.

Before coming to the Coast five years ago Mr. Reiber was associated with Wm. H. Prentice & Co. of Buffalo for four years and for fourteen years he was connected with the well-known house of Burke, Fitzsimmons, Hone & Co. of Rochester, New York.

A Strictly Fireproof Door

Fireproof doors and window sashes and frames are indispensable features which architects should not overlook in planning a fireproof building. So long as there is any wood in a building, whether it be in the doors, the stairs, the windows or even the furniture, that building cannot be called absolutely fireproof. San Francisco architects realize this more today than ever before and in specifying fireproof doors it is only right that they should patronize home industry first of all. Unfortunately, this has not been done as liberally as one might expect for the reason that Eastern material can be had for less money than the home product. But the so-called fireproof doors that are being shipped in here from the East are about as fireproof as a sheet of tar paper. They are cheaply made and positively will not stand a severe heat.

Of the few Coast concerns that have undertaken to supply the local market, none has achieved greater success than Fred Nichols, whose office and factory are at 1137 East Sixteenth street, Oakland. Mr. Nichols will not bid on cheap work, nor will be turn out a piece of material that he will not guarantee. Doors are manufactured by him for office buildings, stores and banks and they are covered either with copper, brass or bronze. Among the buildings equipped by Mr. Nichols since the fire are the Murphy block, at the corner of Kearny and California streets, San Francisco (a cut of which appears in this issue of the Architect and Engineer), the Freeborn building and the Halsey building, the latter a five-story office structure on California street, nearly opposite the Merchants' Exchange building, San Francisco.

SEPTEMBER
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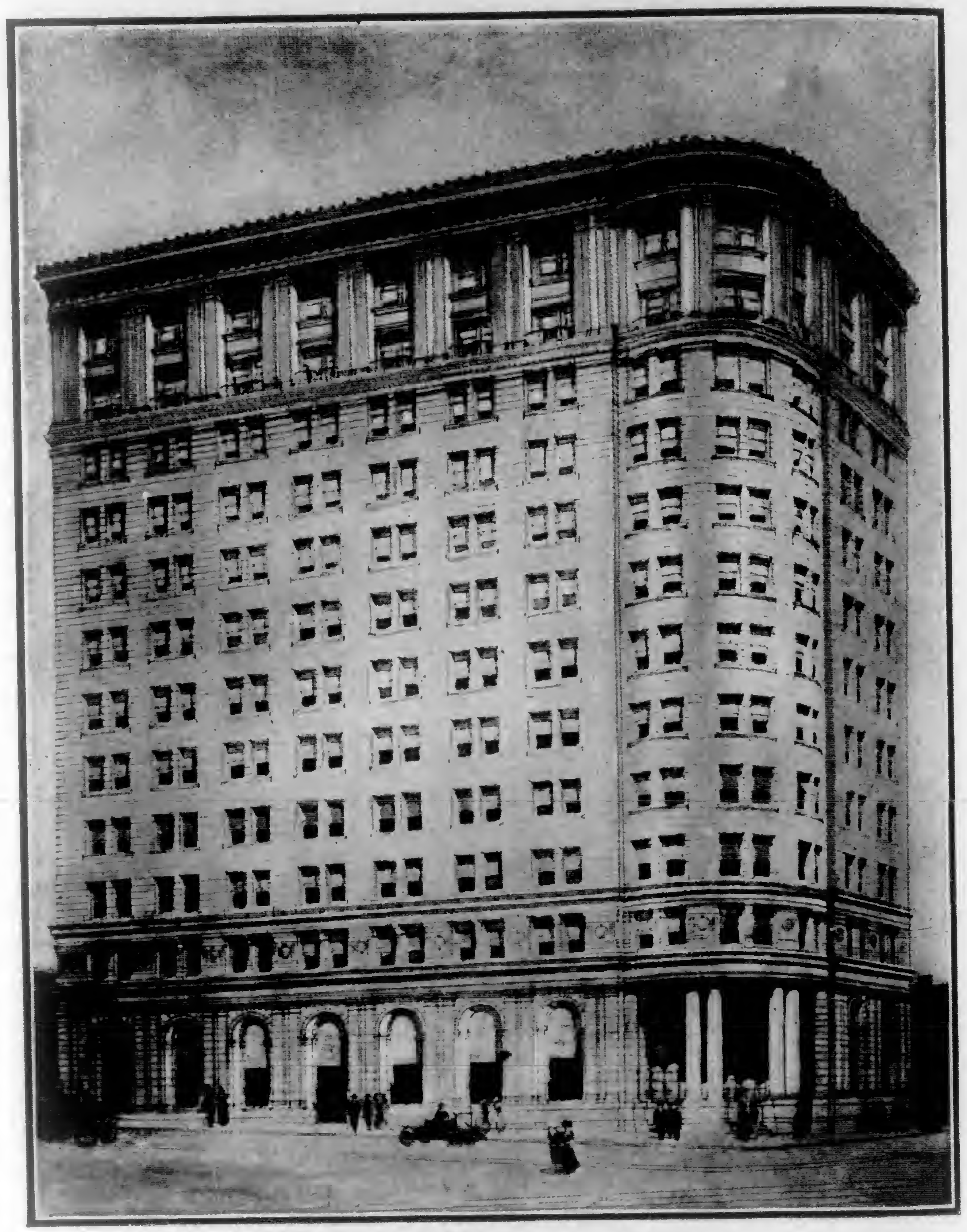


The First National Bank Building, San Francisco
D. H. Burnham & Company, Architects

Frontispiece, The Architect and Engineer
of California, October, 1907

THE

Architect and Engineer

Of California

Vol. X. OCTOBER, 1907. No. 3.

The Reconstruction of San Francisco

By WILLIS POLK, Architect

PROGRESS in rebuilding the burned district of San Francisco has advanced to a point that must remove all doubt, not only as to the rebuilding of the entire district, but of its rebuilding in a more substantial manner than before. The amount of construction at present under way must be amazing to all observers. A view of the financial district from any of the high buildings discloses steel frames in almost every direction and apparently without end. That so much has been accomplished, after the enormous losses occasioned by the fire, could justly be doubted, were it not that the physical evidence of present operations is convincing beyond argument.

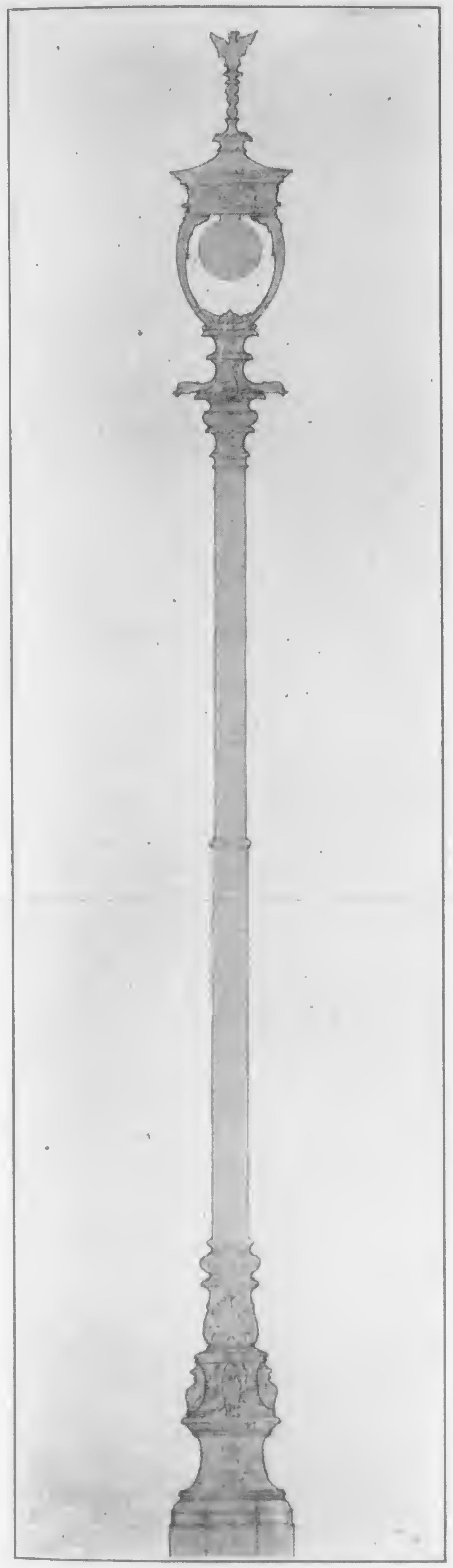
An accurate estimate of the destruction of property by the fire has not been made and possibly could not be made. It has been variously approximated at from three hundred and fifty millions to one billion of dollars. The burned district covered an area of approximately four square miles, or say, 111,513,400 square feet. In the financial district, with its "class A" buildings, the average loss was say $30 per square foot. In the "class B" section the average loss was say $15 per square foot. In the remainder of the burned district the average loss was say $2 per square foot. Deduct 33 per cent of the burned area for streets, or say about 37,171,000 square feet. In the financial district the loss was approximately 10,000,000 square feet at $30, or $300,000,000.

In the "class B" district the loss was about 20,000,000

Entrance First National Bank Building
Equipped with Otis Elevators
D. H. Burnham & Company, Architects

square feet at $15, or $300,000,000. In the remainder of the burned district the loss was at least 25,000,000 square feet at $2, or $50,000,000. Leaving approximately 20,000,000 square feet for vacant lots and unimproved property. This would make a grand total of $650,000,000 loss on buildings. Then the loss on merchandise and household goods probably reached $100,000,000, making a grand total loss of $750,000,000. We have collected about $200,000,000 insurance, leaving a net loss, which this community suffered, of $550,000,000. This loss must be made up, it having been absolutely lost beyond recovery, it must be entirely recreated. The property owner, whose building was destroyed and whose income was cut off, is the greatest sufferer and to recover from his losses will, in many cases, be impossible. Many property owners, therefore, are doomed to bankruptcy. This class of our citizens naturally takes a despondent view of the future. The professional men, mechanics, and laborers, on the contrary, were suddenly presented with a tremendous demand for their labor and consequently are prospering. The demand for labor, both skilled and unskilled, has already increased our population to a very large extent.

The destruction of private fortunes by the fire, while discouraging to the individual victim, has opened a wide field for investment to outsiders with capital. Many investors are quietly looking the field over and are taking advantage of the situation. Titles to real estate will change hands, values will fluctuate, different districts will compete for business advantages, but the wealth of this city as a community will increase day by day.



Accepted Design for Ornamental Street Lights to Be Placed on Sutter Street from the Ferry Building to Fillmore Street, San Francisco.

The present rebuilding in many instances is on a better and larger scale than before; at the same time a tremendous amount of building is being done that should be prohibited by law, and a great deal is being done contrary to the present building and fire regulations. Property owners, in their anxiety to restore their property to an income-producing basis, ignore nearly all of the many lessons taught by the fire. The proper protection of steel scarcely existed before the fire; such protection adds to the total cost of building scarcely 2½ per cent, yet to save this small percentage many steel buildings are now being erected with the steel improperly protected and subject to serious damage in case of fire. The earthquake did not damage any buildings that were properly designed, well constructed and resting upon firm foundations, yet many buildings are now being constructed in a manner that will court certain destruction in case of another earthquake.

It is almost certain that within twenty years San Francisco will have a population of two million people. Our progress in rebuilding has been carried on so far in the face of obstacles of every sort, carried on without concert of action or organized effort, yet it has been marvelous. Indeed, it is doubtful whether more could have been done under any circumstances. However, how much wiser it would be for our citizens to organize and co-operate. Our future seems to be assured even without such co-operation or organization, but how much greater would it be if we organized and worked together?

There is hope that our new citizens will understand the advantage of co-operation better than our old ones. They could not understand it less.

* * *

Lots of people are weighed and found wanting in the social scale.

* * *

It is more easy to evade the trouble which Heaven sends us than that which we bring upon ourselves.

* * *

Franklin—"Did Smith have any luck when he sneaked away and went fishing Sunday?"

Penn—"Yes; his wife wasn't at home when he got back."

The New Chronicle Building, San Francisco

Equipped with Otis Elevators *D. H. Burnham & Company, Architects*

A Plea for Fireproof Construction

By W. J. BARTNETT

IN A recent interview in New York, D. H. Burnham remarked in connection with San Francisco that if the city is to regain the confidence of financial interests and take its place as one of the great American cities, it must be reconstructed as a fireproof city.

The wisdom of these words has lately been evidenced by a number of interviews with prominent financiers of the East. The general feeling is, that if capital is to flow into the city for its rebuilding, extraordinary efforts must be made to perfect in all possible ways its fire protective system.

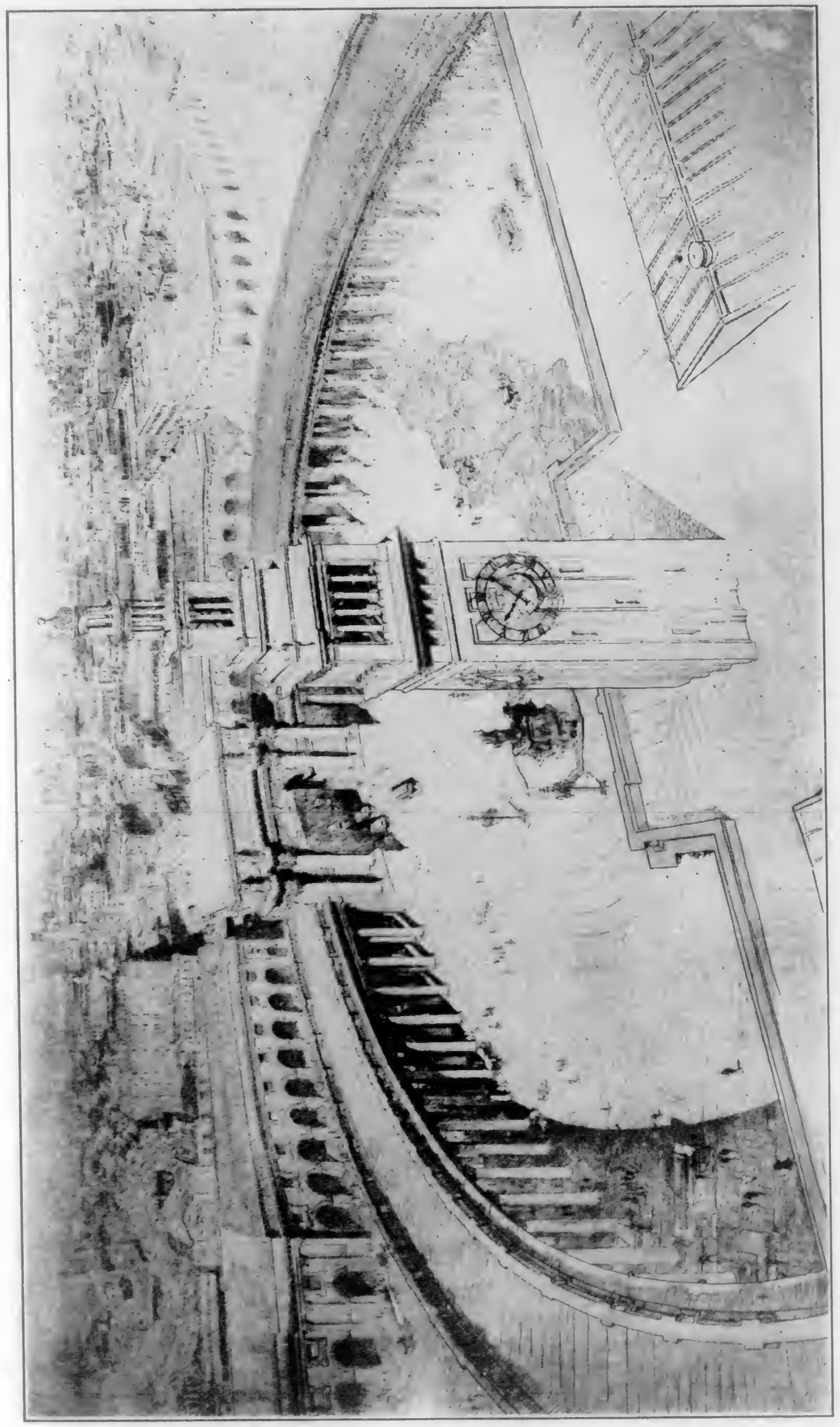
This view of the situation is certainly one that must be heroically met if San Francisco is to be rebuilt on lines proportionate to her dignity as the metropolis of the Pacific. This prejudice in the money centers of the East must be overcome, for it is in those centers and the money centers of Europe that the money—upward of $100,000,000—will have to be secured for the city's upbuilding in a manner suited to the business she is now doing and the vast increase which the next few years will bring.

To rush up cheap structures, for lack of money with which to erect the stately fireproof edifices which otherwise would be built, and cover the burned area with fire traps, is to menace the city's future, for it is but inviting another conflagration. This condition of affairs is readily perceived by the agents of the money markets, and unless very strong efforts are made in the direction of fire protection on an adequate scale the money necessary for the erection of fireproof buildings will hardly be forthcoming in any considerable amounts. The cheap structures are going up and are necessary as a temporary expedient to house the business, but the fact remains that they must presently be replaced by more adequate buildings of the fireproof class. To do this, it is necessary to borrow money. To get this money it is necessary to show to the world that elaborate precautions are being taken to obviate future conflagrations. These facts are self-evident and should make a strong impression on every owner of property in the city, every merchant in the city, every person in any way interested in the business of the city.

To meet this situation no mere temporary expedient will suffice. The money lenders are not satisfied with surface appearances. Some great, comprehensive and fully adequate plan must be carried out, if results are to be obtained. It is obvious that the mere perfecting of the city's water supply will not be sufficient; that can be but part of an adequate plan. The situation demands other elements of protection, among them the widening of certain streets, the establishment of new streets and the laying out of open park spaces at intervals.

To accomplish this requires the amendment of the charter so that a proper bond issue can be authorized, the framing of the bond issue to enable such work to be undertaken and the sale of the bonds. Following this it would perhaps be wise to call Mr. Burnham to the city to head a commission appointed to undertake this work or to act in concert with the Board of Supervisors.

San Francisco is now suffering from lack of co-operation and unity of action. Unity of action is essential if we are to accomplish much. To bring together the diverse interests will require a generally recognized leader. Such a leader is perhaps to be found in Mr. Burnham. Furthermore, if Mr. Burnham was to head this work of reconstruction and improvement the financial centers of the world would accept his utterances and the credit of our people would be materially assisted by the statements he would make as



Proposed Peristyle and Arch, Foot of Market Street, San Francisco
D. H. Burnham & Company, Architects

to the city's progress. Today San Francisco is discredited to a large extent to the money centers of this country and Europe. The true conditions as to progress here are not understood. The city has done much; in fact, has made wonderful headway. She can do more in the coming year than she has done in the past, provided she outlines a definite constructive program contemplating the issuance of bonds for the necessary municipal improvements, including an entirely adequate fire protective system, and calls to the leadership a man such as Mr. Burnham, who has the confidence of the financiers of America and Europe. After his long study of the city, culminating in the magnificent plans for its improvement which bear his name, there is little doubt that he would accept an invitation to come.

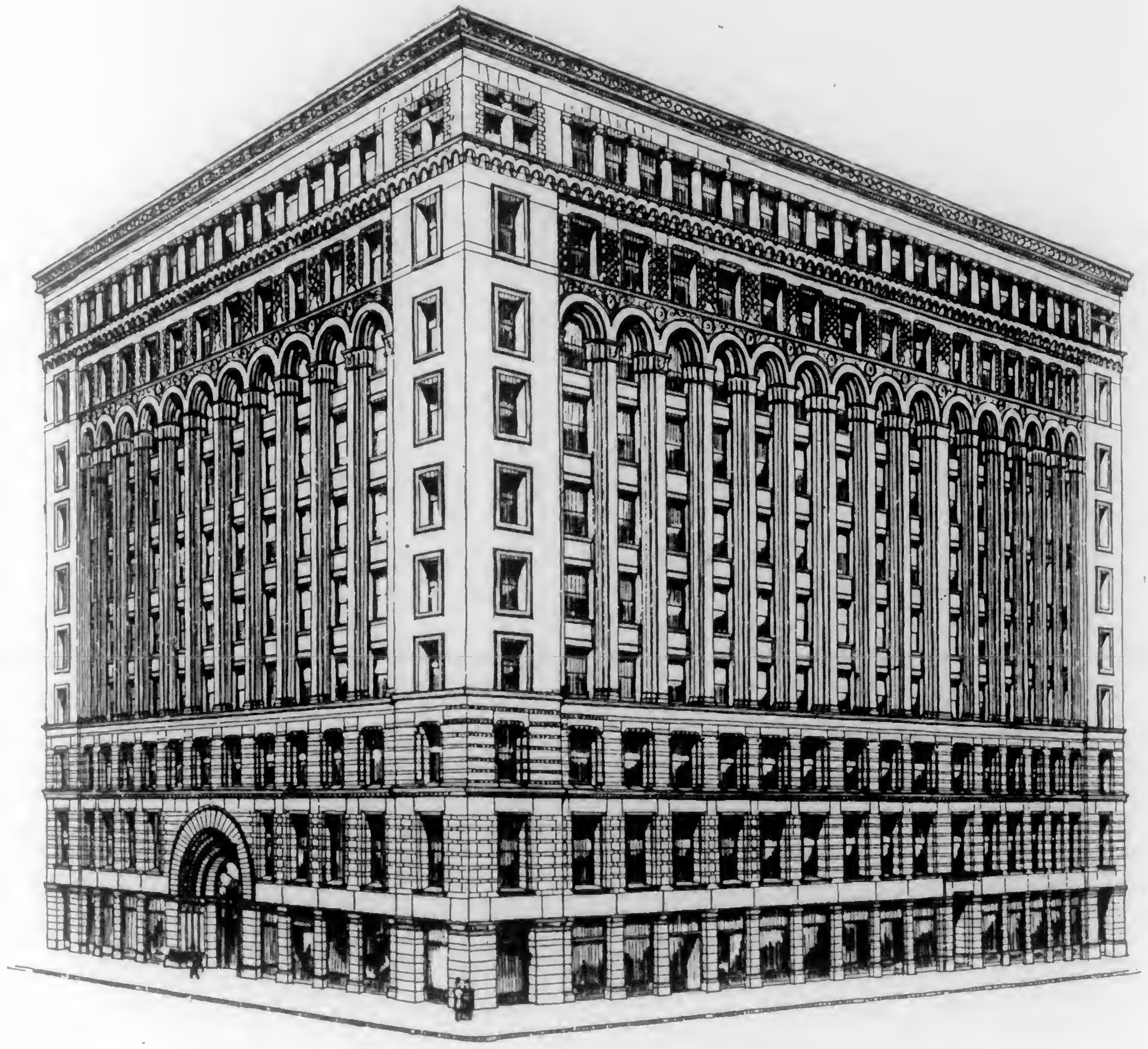
Let the Mayor and the Supervisors lend a hand, the charter be amended, a bond issue authorized, the bonds sold, Mr. Burnham invited to come and the good work go on.

* * *

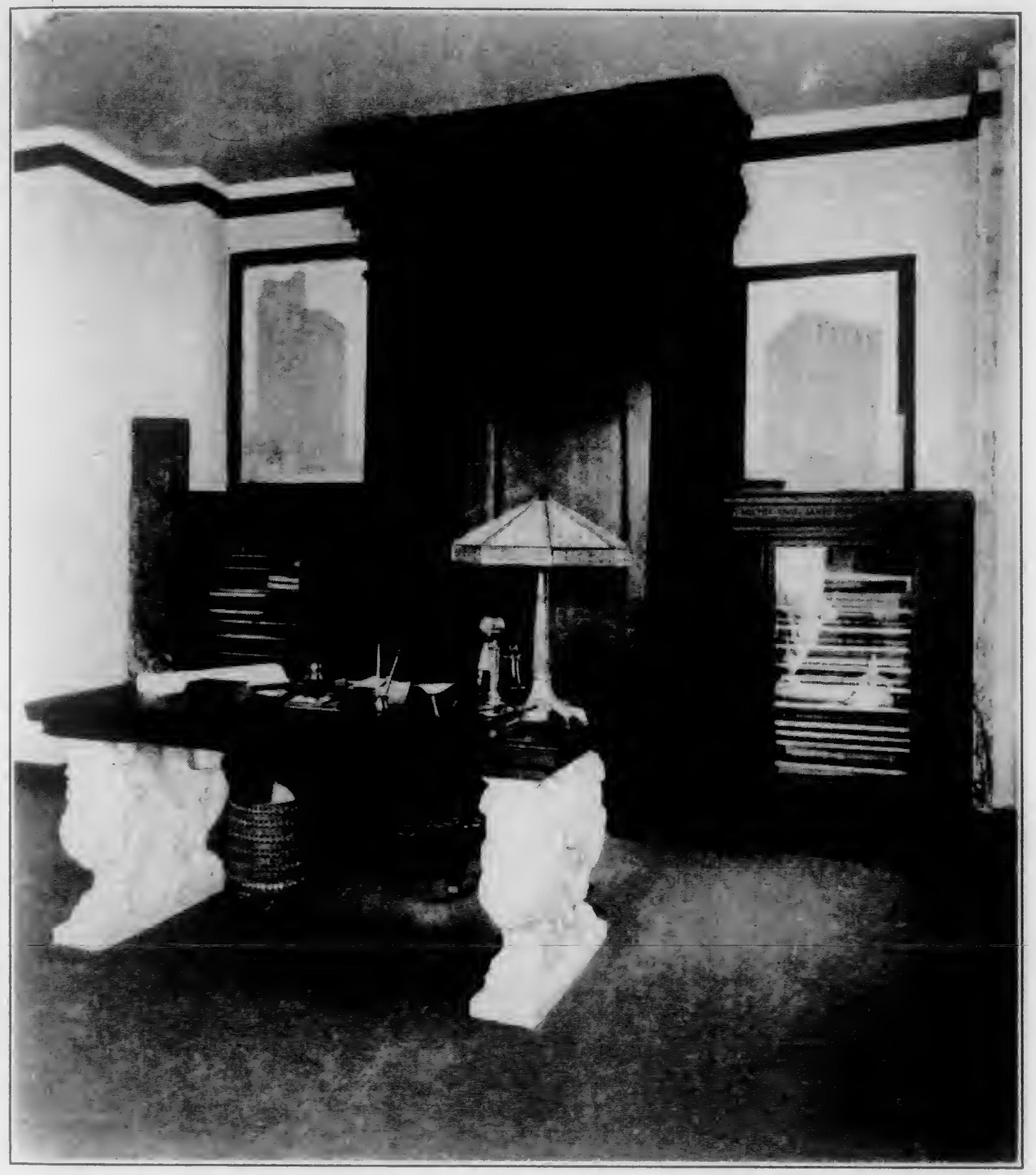
San Francisco's Recuperative Energy

THERE is a popular impression here in the south, and to a very large extent all over the country, that the city of San Francisco is now "down and out," having "taken the count" and that her seconds have "thrown up the sponge.". San Francisco has had misfortunes enough to justify the assumption of just such a desperate situation as would be indicated by this expressive language of the prize ring, and under the same circumstances almost any other city would, indeed, be "down and out." Indeed, we doubt very much whether Los Angeles could recover in a lifetime from such a disaster as San Francisco has suffered; and this is not to be understood, either, as any reflection upon our neighbor, for the Southern California metropolis is really a wonder of enterprise and growth and industrial activity.

We have said that there is a popular impression that San Francisco is a "dead one." There is no greater error possible. San Francisco is today the busiest city in the United States, if not in the world. On the whole peninsula upon which the California metropolis is situated one cannot get out of hearing of the persistent stroke of the builder's hammer. The old business section is a Bedlam of structural activity. Not one or a dozen, but literally hundreds of steel and concrete buildings, the most substantial known class of construction, are pushing their sturdy frames into the high altitudes overlooking the bay and ocean, defying the earthquake demon and standing as lofty monuments to the courage and determination of these people whom adversity has once stripped in a few hours of the accumulations of a lifetime. It is stated that there are at this time under construction in the city of San Francisco more than 3000 buildings, but that over 6000 buildings have been erected since the fire. Fifty thousand men are today engaged in the building trades of San Francisco alone, while the stupendous sum of $80,000,000 has already been expended in the work of rehabilitation, not including the restoration of commercial stocks. It is estimated that more than $30,000,000 has been paid into the pockets of San Francisco day laborers. San Francisco a dead one! There is nowhere in the world a city evidencing such pronounced symptoms of life and vigorous health. Instead of the common expressions of disparagement which we hear so often, we ought every one of us to have our hats off in wonder and admiration for the growth and progress which San Francisco has made and is making in the face of every possible discouragement. * * * —Riverside Enterprise.



The Reconstructed Mills Building, San Francisco
Equipped with Otis Elevators D. H. Burnham & Company, Architects



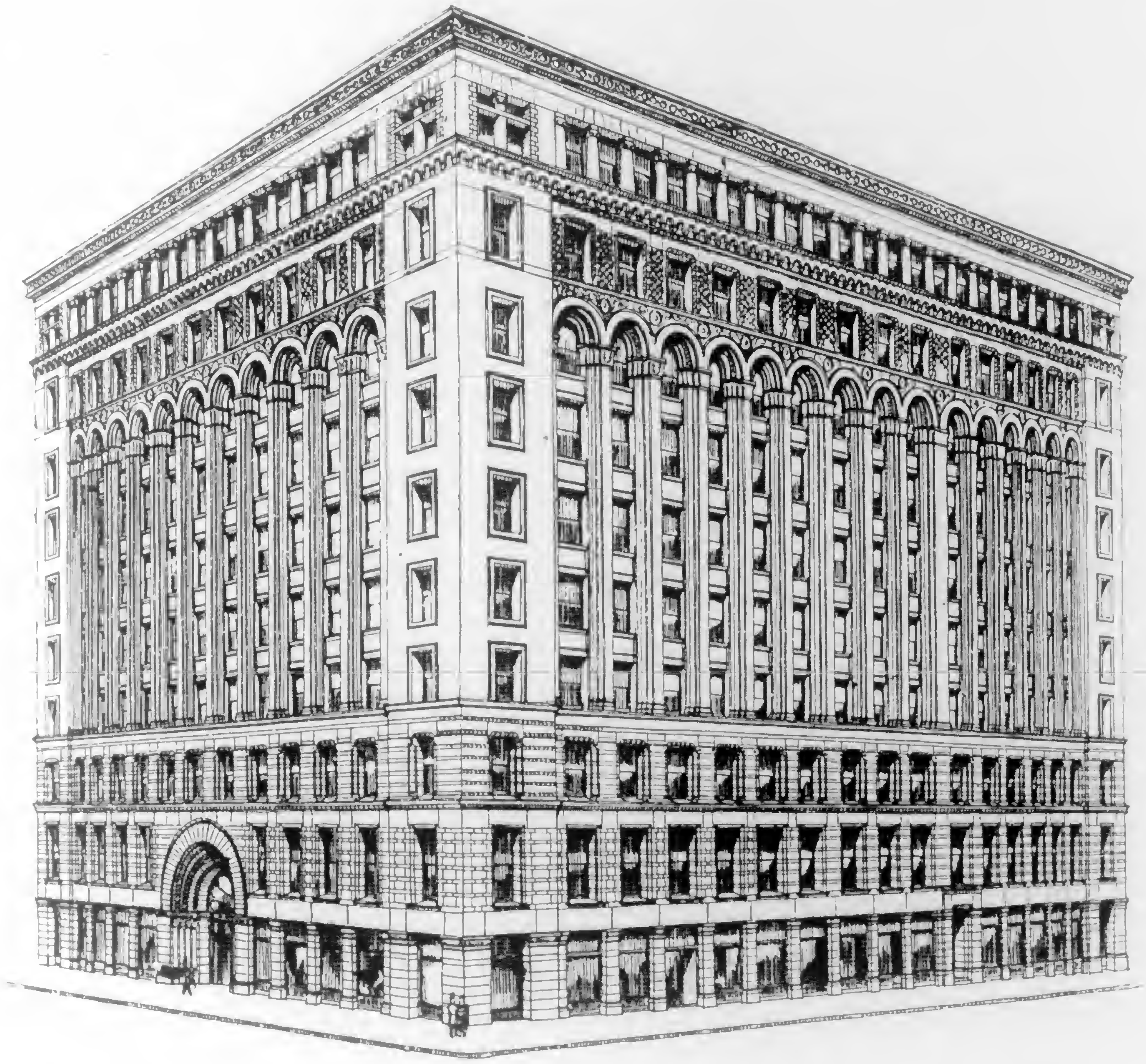
Consultation Room of the D. H. Burnham & Company, Merchants' Exchange Building, San Francisco

Day Dreaming

Day-dreaming is a good stimulant to the ambition, but, like many a stimulant, it must be taken in moderation to give the best results. Dream golden dreams, and build aircastles if you will, for great accomplishments must be dreamed of in this way before they become realities. But don't forget that the dream is a mere outline plan, and it takes work to build the real castle. The exact proportion of time that should be given to dreaming and the time for work have never been set forth, but the lion's share is evidently on the side of work.

* * *

Conceited people would not be so bad if they didn't spend so much time in trying to monopolize all the limelight.



The Reconstructed Mills Building, San Francisco

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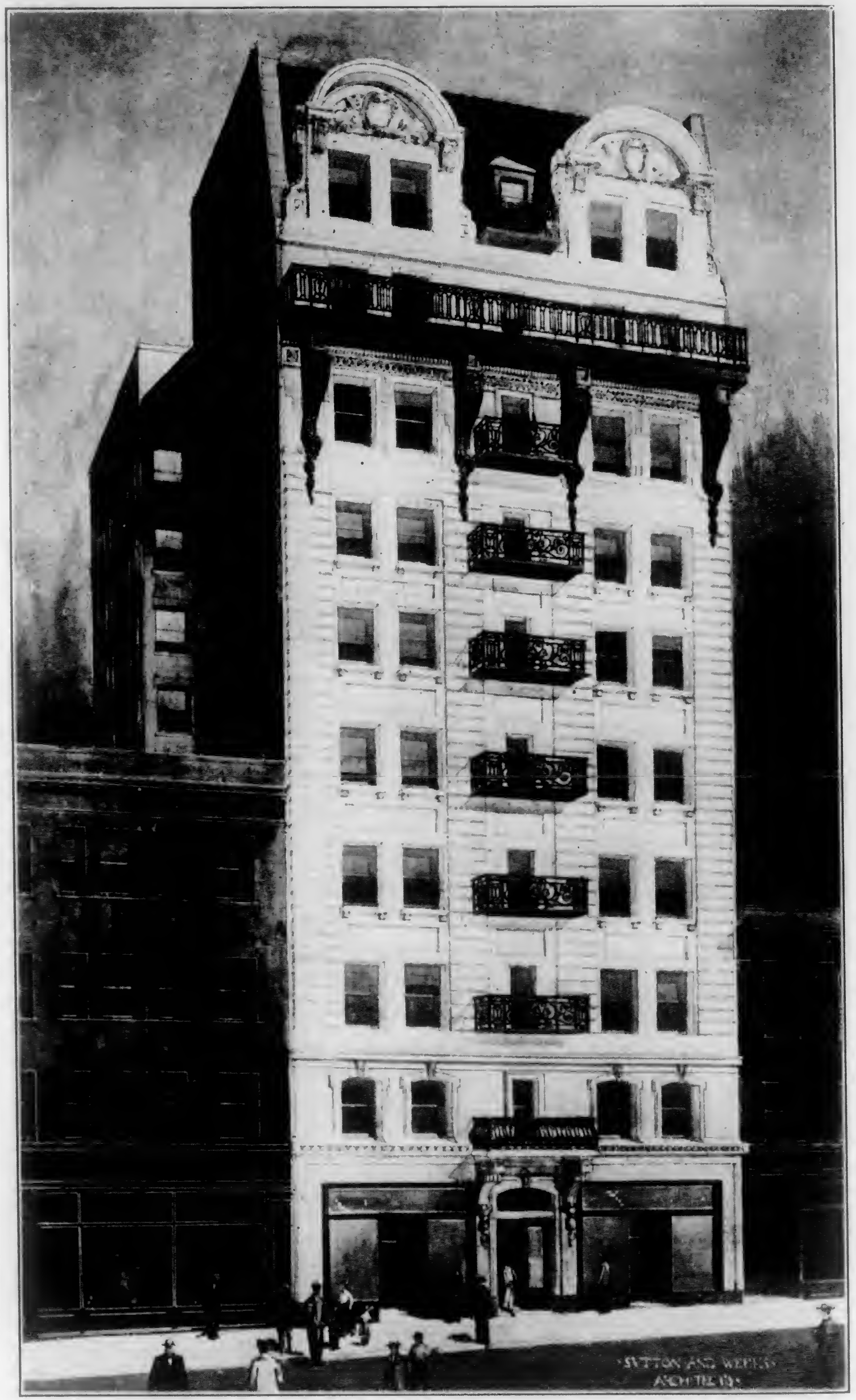
The New Oregon Hotel, Portland
Sutton & Weeks, Architects

Architects' Right to Compensation for Drawing Plans

THE right of an architect to recover compensation for plans which he has drawn is always based upon contract. If any of the essential elements of a contract are missing from the transaction upon which the architect's claim rests, then he is not legally entitled to payment, no matter how much time and labor he may have expended, or how great expense he may have incurred in the work, says John E. Bray, a member of the New York Bar, in a recent issue of The Architects' and Builders' Magazine.

An illustration is found in the case of Allan vs. Bowman, 7 Mo. App. 29. There an architect, having learned that a certain person was about to build a house, solicited from him the superintendence of the work. The architect called upon and interviewed the owner several times and, on one occasion, the owner went to see the architect at his office, but no definite agreement was entered into. The architect, however, made sketches of a ground plan and a front elevation, which he exhibited to the owner at the latter's residence, where a number of suggestions for improvements were offered by the owner's wife and made note of by the architect. The owner then decided to drop the matter, but told the architect that he would appoint him superintendent of the work if he later determined to build. The owner thereafter commenced to build, but engaged a different superintendent, and the architect rendered his bill for the plans which he had drawn, on the non-payment of which he brought suit. There was, of course, no right of recovery, for the reason that there was no evidence of a promise to pay, either express or implied, and therefore no contract. The plaintiff was in the position of having made an offer which had never been accepted. A person cannot officiously do work in the expectation of an engagement and then, when the expectation fails, sue for the price of the work done. The burden is upon the plaintiff in every case to show that he did his work under a promise, express or implied, by the other party to pay for the work.

The case of Tilley vs. County of Cook, 103 U. S. 154, presents an instance of an architect, disappointed in the collection of his fees, upon somewhat similar grounds. Cook County, Illinois, and the City of Chicago, having decided to erect certain public buildings, invited by newspaper advertisement the submission of plans in competition and jointly offered premiums for the three best plans entered. The plaintiff was awarded the third prize of $1000 and later the County Commissioners passed a resolution adopting his plan as the one after which to build the Court House and City Hall. The plaintiff then started an action to recover five per cent of the estimated cost of the buildings as compensation. But here again recovery was denied because there was no contract. By the payment to the plaintiff of the amount of the prize won by him the defendants discharged every obligation which they owed him arising out of the preparation of the plans for the proposed buildings. If the plaintiff had any right whatever to compensation, it was necessarily based upon the resolution of the County Commissioners adopting his plans. But the resolution was not passed at the instance or suggestion of the plaintiff. It was not in itself a contract, but a mere voluntary expression of intention, which might have been reconsidered and rescinded the following day. It was no more a contract than if a private person should announce his intention of erecting a house in accordance with a design which he had seen in an architect's office, and should change his mind before beginning the execution of his purpose without even calling for or using the plans. The plaintiff in the Cook County case offered



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Ordinarily it is necessary that there be a delivery or tender of the plans contracted for in order to justify a judgment for the services rendered in the preparation of the plans. The question of what constitutes a sufficient delivery or tender often arises. In Kutts vs. Pelby, 37 Mass. 65, the plaintiff, at the request of the defendant, drew for him a sketch of an Egyptian front for a theater, which the defendant took and retained for a period of a week. The defendant expressed himself as pleased with the sketch and told the plaintiff to go ahead with the plans for the theater. When the plans were completed the defendant's master builder called for them and kept them for a week, for the purpose of making an estimate of the cost of construction. The plans were then turned over to the defendant, who later decided not to use them in building. The plaintiff was allowed to recover, it being held that there had been a sufficient delivery; it was also held that the defendant's determination not to use the plans, after they had been delivered, did not preclude a recovery.

It is not, however, always necessary that plans actually be delivered in order that the architect who drew them may be entitled to recover for his services. Thus, where it was agreed between the parties that the architect would notify the owner, for whom he had contracted to prepare plans, when the plans were ready and that the latter would then call and examine them, the architect was given a verdict for the amount of his compensation under the contract upon showing that he had completed the plans and had sent word to the owner, who had failed to call for the purpose of inspecting them. Wandelt vs. Cohen, 36 N. Y. Supp. 811.

Where an architect is employed to furnish plans and specifications for a building with an estimate of the probable cost of the work, he is not entitled to pay for his services unless the building can be erected at a cost reasonably approximating that stated in the estimate. In Feltham vs. Sharp, 25 S. E. 619, an architect brought an action to recover three and one-half per cent of $4300, the estimated cost of a building for which he had drawn the plans. Upon the testimony of the defendant that he had submitted the plans furnished to two firms of contractors and that the lower of the two bids made thereon was $7800, it was held that the architect was not entitled to the compensation claimed.

* * *

Poe Revised

I asked the bird
  What it would say
In case it heard
  An oyster bay.
And from above my chamber door
Quoth the raven, "Sagamore!"

The Competition "Ghost"

THE architect's "ghost" has so frequently made his appearance amongst those concerned with architectural competitions, and with material advantages to those who may have called him forth, that some particulars respecting him may be of interest.

Although, as a rule, the architect who employs "ghosts" is perhaps more despised than the employed, yet, to the writer's personal knowledge, many of the most esteemed leading architects have had resort to such aids when preparing their competitive or other schemes for buildings out of their usual class of practice: such as municipal offices, police stations, hospitals, workhouses, asylums, public baths, theaters and music halls; designs for which may have been required from an architect whose experience has been in other directions.

But cases have occurred where architects fully experienced in certain classes of design and planning have been anxious to obtain the ideas of other specialists, but without disclosing the names of those supplying the same; in some instances the aid may be required by reason of pressure of business.

The "ghost," however, has very frequently been employed by the county, municipal, district or other surveyor, who may have been charged with the duty of preparing designs for public buildings without possessing a sufficient knowledge of the nature of the work required, and who may thus deprive qualified architects residing within his district (ratepayers contributing to his salary) of business to which they may have some claim. (This work, supplied by a public surveyor, but done by the "ghost," becomes a reason for an increase in the official's stipend, to which, of course, the neglected architects contribute also their proportion as ratepayers.)

In the case of competitions, the remuneration of the "ghost" often takes the form of a salary to be agreed upon, together with a bonus in the event of success; or if the competitor be placed first, the first premium may be given, after which the "ghost" has no further claim, neither does he obtain any published credit in respect of his successful efforts.

Occasionally the whole of the work of the "ghost" may be done at his own residence or offices; such was the case in connection with an enormous public building, in reference to which the following agreement was signed by a certain very eminent firm of architects and a specialist employed by them:

> MEMORANDUM OF AGREEMENT made this .... day of ...., between .... of the one part and .... of the other part. The said .... doth hereby agree to prepare the whole of the plans and drawings required and in accordance with the published instructions to architects, for the competition for the new........... .... at ...., and undertakes to deliver the same at least one week before the .... day of .... next, or at least one week before any later day that may be arranged for by the promoters of this competition; together with a full draft report and estimate of the cost, and will perform the work to the best of his ability and in accordance with all the requirements as far as may be possible. And the said .... do hereby agree to pay to the said .... in respect of the above services the sum of one hundred pounds in manner following, that is to say, the sum of ten pounds on the commencement of the work, the sum of forty pounds when the sketch plans are delivered, and the balance of fifty pounds when the finished plans are delivered, ready for mounting, etc., by the said ....
>
> Should the said .... be appointed architects to carry out the works herein referred to, or any considerable part thereof, they agree to pay the said .... the further sum of two hundred pounds upon receiving the first installment of commission.

Signed by the said parties
hereto, the day and year ....
first above written. ....

The employers in the above agreement stood to obtain a commission which, at five per cent, would amount to £10,000, while the "ghost," in the most favorable circumstances, would not get more than £300, although he practically did all that was necessary in obtaining the work.

In what manner does the "ghost" obtain his employment? In some cases he notes that there is to be a competition of architects for schemes for some public building, the special details of which are familiar to him, and he forthwith writes a private letter to those local and other architects who may appear likely to enter upon a little speculation, offering his services upon "speculative terms," though not usually stating what those terms may be in the first instance; occasionally, however, demands for such assistance are the later results of replies to advertisements in the professional journals.

An architect, now deceased, kept in his London office a couple of young assistants who inked-in, colored and finished a large number of competitive drawings which were supplied and finished ready in pencil by a "ghost," who also prepared the report and estimates; the architect who employed him was a thoroughly competent man for architectural work of certain descriptions, but found it necessary to employ someone to make the design for buildings, the details of which were not familiar to him; but it is only fair to state that he paid the "ghost" very handsomely for schemes that would have cost, probably, not less than £800,000 to carry out.

Occasionally a thoroughly incompetent architect is desirous of winning a competition, and has paid a specialist to come into his offices for the purpose. A case occurred some years ago of such a man whose only part in the work was the mounting of the plans on the stretchers; he was the architect of a set of chambers, and the only tenant of the building, which was a standing warning to his fellow townsmen not to employ him; but he won the competition by the efforts of the specialist he had selected! Thus some have greatness thrust upon them!

On occasions the "ghost" has supplied designs for more than one architect in the same competition, in this way gaining an increased possibility of obtaining a bonus, in addition to the extra salary, but this would not frequently occur, and the strain upon the "ghost" in making two schemes for the same building, within a limited space of time, would be considerable, especially where it was desirable that the two designs should be unlike in all respects.

The "ghost" may be perhaps an architect with a small practice who is a good draughtsman and designer, and it often happens that his services are valued rather in respect of the planning, arrangements and construction of a building than for the elevational portions, but his aid in reference to the report and estimates are often desired, especially in those cases where complicated questions arise as to the warming, ventilation, sanitation, engineering, artificial lighting, etc., of a very extensive series of buildings connected with a workhouse, asylum, hospital or other establishment intended for the housing of large numbers of various classes of inmates.

Or the "ghost" may be an architect's assistant out of employment who cannot afford the risk and expenses connected with a competition, but who is only too glad of the temporary work, especially when there is a prospect of further remuneration or employment in the event of success.

During recent years many architectural competitions have had, amongst their conditions, a clause prohibiting the employment of any assistant not a member of the competitor's ordinary staff, but unless a stipulation be added to the effect that all assistants employed must have been in such employment for a term named, the clause could easily be evaded; nevertheless, special assistance is often fairly required, for many details in connection with exceptional building plans, and particularly in reference to certain engineering and sanitary arrangements, are out of the range of an ordinary architect's practice; heating and ventilation and laundry appliances, as connected with very large buildings, have so frequently been unsatisfactory when contrived by architects not having the required previous experience of such works, that the employment of persons well acquainted with these subjects becomes obviously necessary and desirable.

House of Henry F. Starbuck, Oakland
H. F. Starbuck, Architect

Long before a competition was advertised, local influence has frequently settled that a local architect should have the commission, all that has been necessary being a scheme that would pass muster; hence the appointment of a "ghost" assistant. The selection of his design, however, has not been the only advantage to the architect. The writer recollects a certain case where a competing architect, not getting back his unsuccessful designs, called at the offices of the local surveyor, where, and to his very great astonishment, he saw his plans under the process of being traced; he acted very promptly by tearing off the tracings and, rolling up his drawings, departed, after expressing his opinions very freely.

In such instances as the above there have been deliberate attempts to steal the designs made by an architect, who may, for local reasons alone, have been unsuccessful; yet, as the designs of all the competitors are exposed to view, the unsuccessful architects may all be utilized as unpaid "ghosts"; in fact, there have been numerous instances where unselected designs have influenced very considerably the planning and appearance of the buildings as erected.

In spite of all that has been done towards putting down the "ghost" system, the Royal Institute of British Architects would be surprised to know the names of some of the Fellows and Associates who have taken either the part of "ghosts" or acted as employers of them, the latter including some of the most respected and best architects of the past quarter of a century.

A very well known firm of architects, in Lancashire, employed occasionally a very able architect as their "ghost": although he was very steady and reliable, yet it was found necessary (with his consent) to lock him up in an office while he was working, with only the plans and papers relating to the work in hand accessible to him, as he had a bad habit of turning to other subjects, and a great difficulty in concentrating his attention; probably had it not been for this failing he would have been in more successful practice on his own account; several works on construction were written and published by him and are of high value, but his habits and nature fitted him only for employment under architects with business habits; he gained some notable success as a "ghost" in the employment of those who had the advantage of recognizing his great ability.—"X" in the Builders' Journal.

* * *

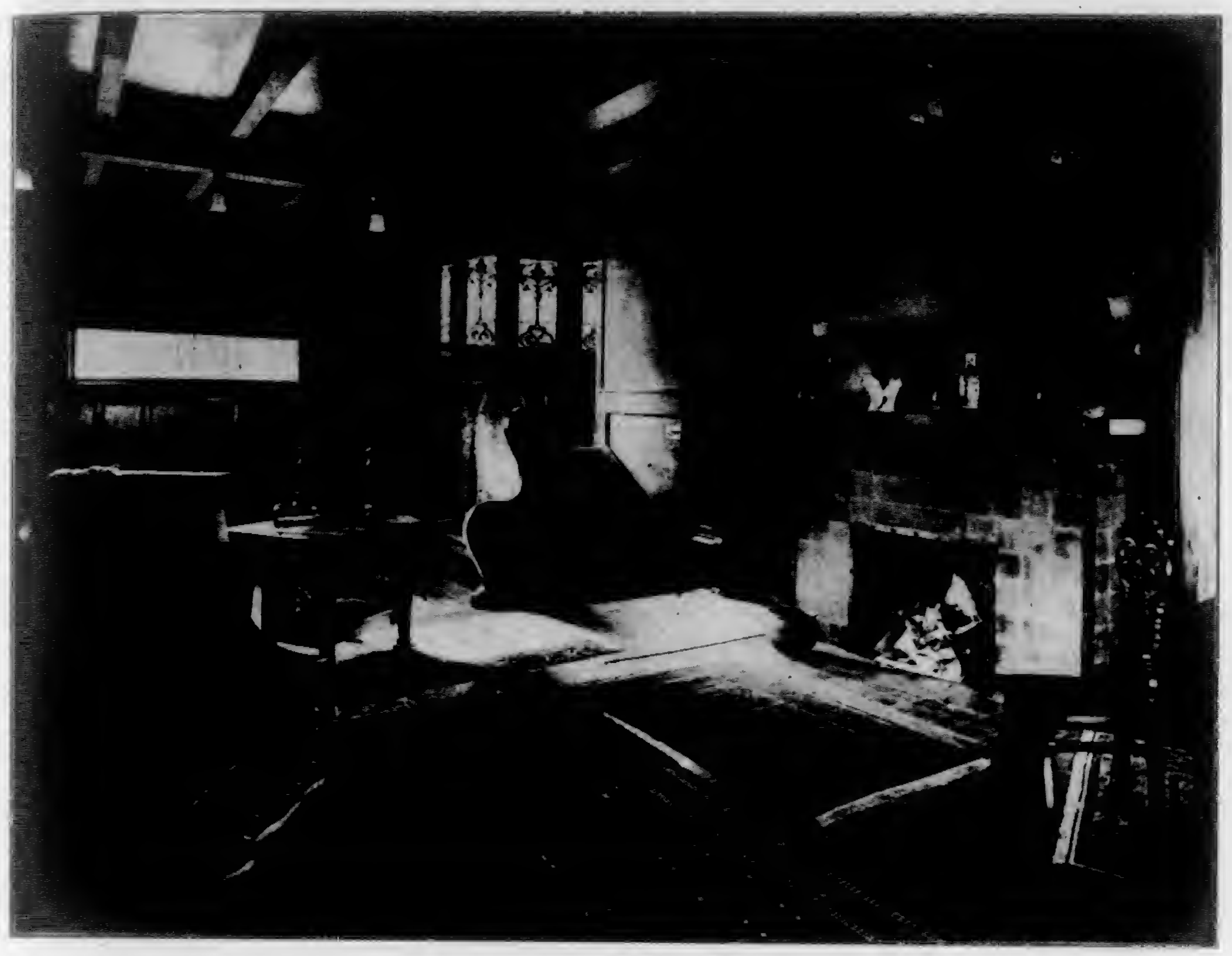
The Up-to-date Architect

IN DISCUSSING in a recent address the qualifications of the up-to-date architect N. C. Fowler, Jr., a member of the profession, presented the following ideas: The architect is born. He cannot be made. If the boy does not show some creative skill, even while in his teens, there is not one chance in a thousand that he will ever become a successful architect. The copier is not an architect. The architect may copy, but he does something besides copying. He mixes his own ideas with those of others, and nothing that he does is devoid of his personality. The boy who can draw a plan geometrically correct may be entirely without the artistic temperament necessary for success in architecture.

Not only the ability to construct, but also that quality of ability which creates in advance the plans of construction, is essential to the proper practice of architecture. The successful architect is both a nature-made and a self-made man. Nature-made in that he possesses the natural ability necessary to success; and self-made because he has thoroughly trained this natural ability. The architect possesses something which is not a part of the man of business—a sense of harmony, an artistic mental attainment, a creative ability—yet he must have some of the qualities of the successful business man—an appreciation of the importance of detail and the ability to handle men and things.

The greatest hardship with which an architect has to contend is due to the fact that the very nature of his work, combining as it does the practical with the artistic, prevents the average man from distinguishing between real merit and mediocrity, and he frequently fails to command the appreciation and encouragement which his work deserves, and which is given more frequently in other professions.

The compensation for work of ordinary size, such as must make up the bulk of the output of the average does not possess natural aptitude for this work. The architect is a creator of originality. He is not a mere plan drawer and specification writer. He actually does something. The conscientious, hard working architect, endowed with a fair degree of talent, usually gets from his profession an income less than the earnings of a small contractor. At the minimum rates established by the American Institute of Architects few architects today acquire a competency for old age. Yet the public regards these absurdly low rates as exorbitantly high.



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Why Brick Buildings are Best

STABILITY, the most important feature of any building, especially one used for business purposes, is not absolutely certain with cement. It is certain with brick. A properly constructed brick building may be torn down, but can not be shaken down. How many brick buildings did you ever know to collapse? Brick buildings do not collapse. They are as stable as the everlasting hills. Another important feature of brick is its permanency. Bricks made so long ago that their origin is lost in the maze of antiquity are constantly being dug up on the sites of ancient cities as sound and clean as the day they were burned. Brick will not burn. Good brick will not crack, as stone does, and brick will not decay like wood. All these are important elements and deserve careful consideration. Permanency, stability and beauty are three most important considerations in the construction of any building. Another thing is cost. But in this ought to be included cost of maintenance as well as first cost of construction, and it costs much less to keep up a brick building than it does one of wood or other perishable materials, and therefore the cost of a brick building, extending over a series of years, is less, all things considered, than any other building that can be built. More and more these facts are recognized. More and more builders are seeking out the material which most nearly combines in proper proportions these features, and more and more brick is found to be the one material which includes these features. The result is obvious in every city and town in the country.—Clayworker.

* * *

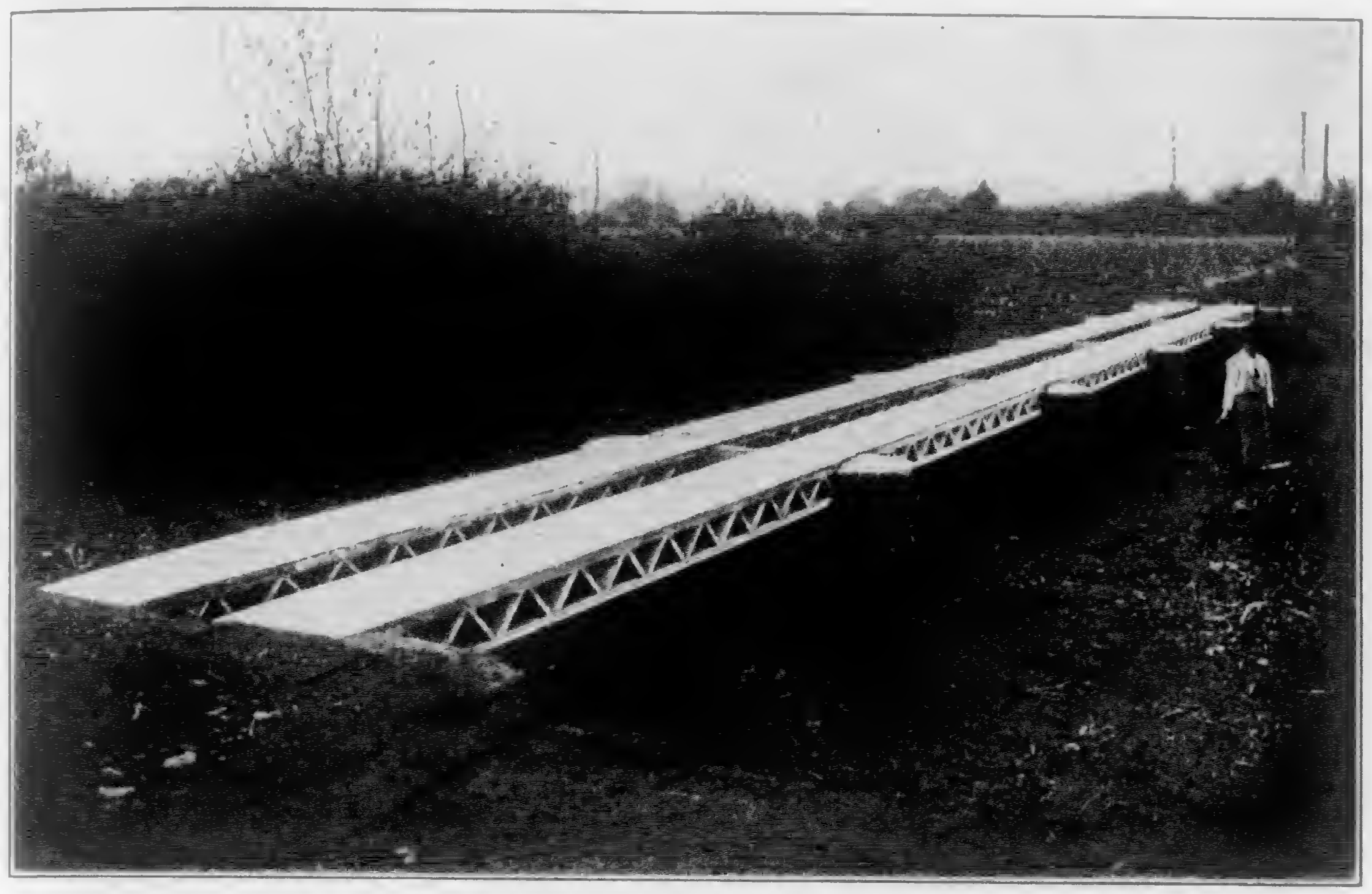
Cement Shingles Cheaper than Wood

The use of cement for replacing articles made of wood is increasing every day. Cement has already replaced wood, to a great extent, in building sidewalks, bridges, fenceposts, steps, building walls, foundations and many other purposes and is commanding considerable attention at present in the form of shingles, says the Popular Mechanic's Exchange. In the earlier instances of concrete roofing the material was used in the same manner as in laying a floor, but the great strength required in a floor is not necessary in a roof. The cement shingles are only a little heavier than slate and not much more expensive than the best wood shingles, and, as they are practically indestructible, they are cheaper in the end than any other material, including tile and slate. These shingles are made in a great variety of designs, and are reinforced with metal skeletons, which hold the cement together, and terminate in loops at the edge for nailing to the roof. They are practically everlasting, as moisture, the cause of universal decay, is the chemical agent in the process of hardening cement and when properly mixed and tempered the cement shingles become harder and more durable the more they are exposed to the weather.

* * *

Chanson De Nuit

Now, in these chilly autumn nights
When you'd reach down to yank it
Up o'er your form
To make you warm—
Oh, where's that other blanket.
—Exchange.



A Railroad Bridge of Reinforced Concrete

The Tiny-Visintini System of Reinforced Concrete

By L. MESS, Consulting Engineer

AN EPOCH-MAKING discovery in the domain of reinforced concrete is being introduced by the Concrete & Steel Engineering Co., of 410 Kearny street, San Francisco. This is the "Tiny-Visintini" System of Reinforcement, American Patent 735,920 of Engineer Visintini of Austria.

This system, which has, in a short time, inaugurated a complete transformation in the world of reinforced concrete, has already become known and appreciated by the engineering profession throughout the entire world.

The underlying principle of the system is to produce beams and girders out of concrete and steel which give the greatest possible strength with a minimum of material, and make possible a reliable theoretical calculation, and also allow for the construction of lattice girders and beams in a simple way as well as en masse.

Every engineer who has made calculations in reinforced concrete construction, is fully aware of the fact that, in the ordinary concrete system, there is a positive waste of material, and that the best qualities of the concrete and steel are only partially utilized.

A complete use of the material at hand can only follow in correctly constructed lattice girders, where a uniform distribution of the stresses over the sections is secured, due coincidences of the axes of the sections and the direction of the stresses.

The lattice girders in the Visintini now known as the "Tiny" System, are composed, as may be seen from illustration, of an upper flange, which, with an equally distributed load, is subject to compression only, to which the existing concrete is of itself sufficient.

The lower flange, which is only used for tension and which takes up all tension stresses, is composed of steel bars running through horizontally. These

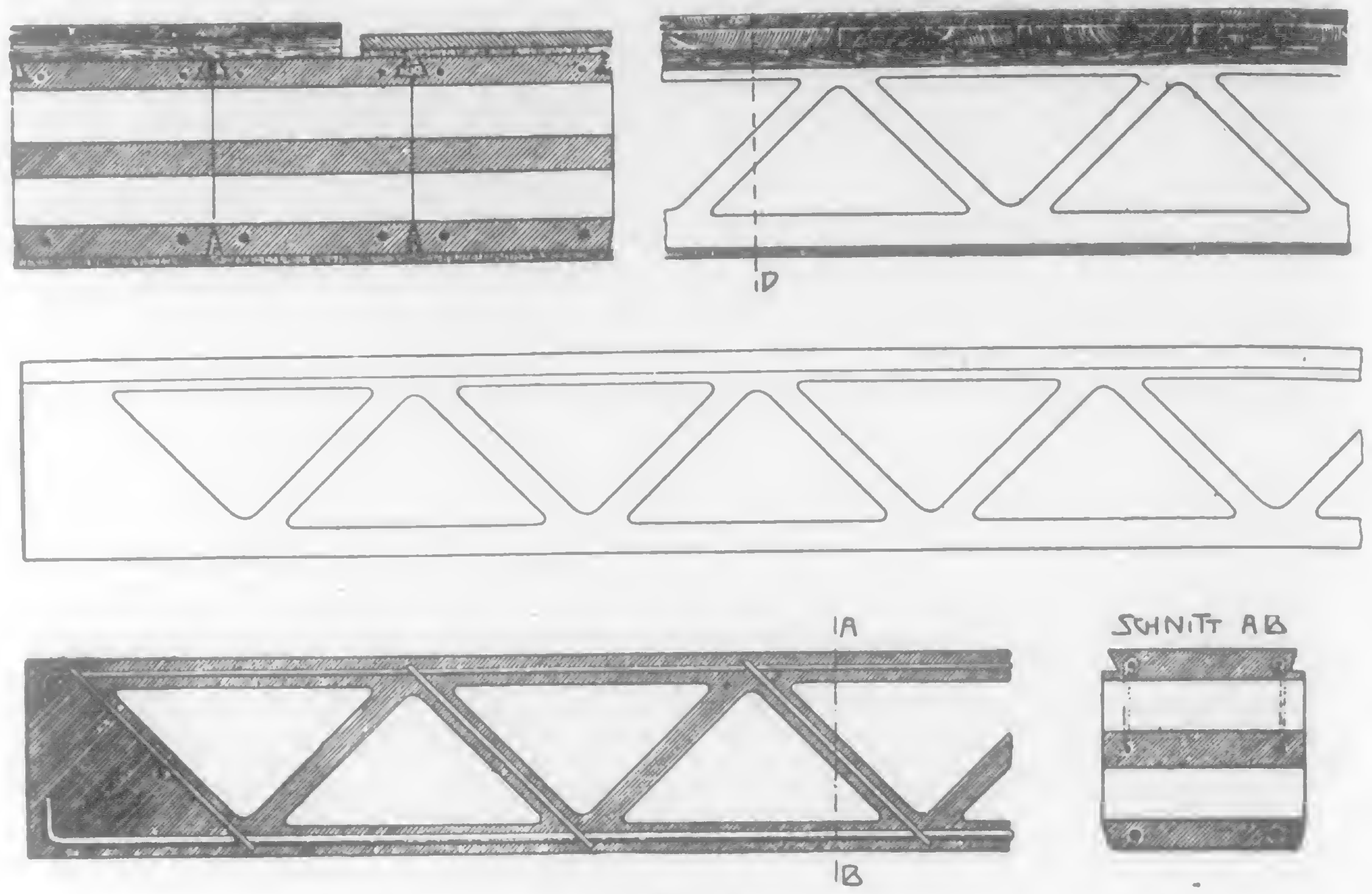


Fig. 1.

bars are bent up at the end. The concrete surrounding the steel bars is used only for protecting the steel from rust and fire.

The lattice work between serves the purpose of connecting these two flanges, and of these diagonals, one takes up the tensile and the other compressive strains.

No steel is put into the diagonals for compression because the compressive strains are taken up by concrete itself.

Although depending on the form, the Tiny beams generally have parallel top and bottom chords or flanges with alternating straight and oblique or only oblique web members.

The connection of the diagonals with the upper and lower flange, is obtained simply by bending and hooking the ends of the web reinforcement around the flange reinforcement.

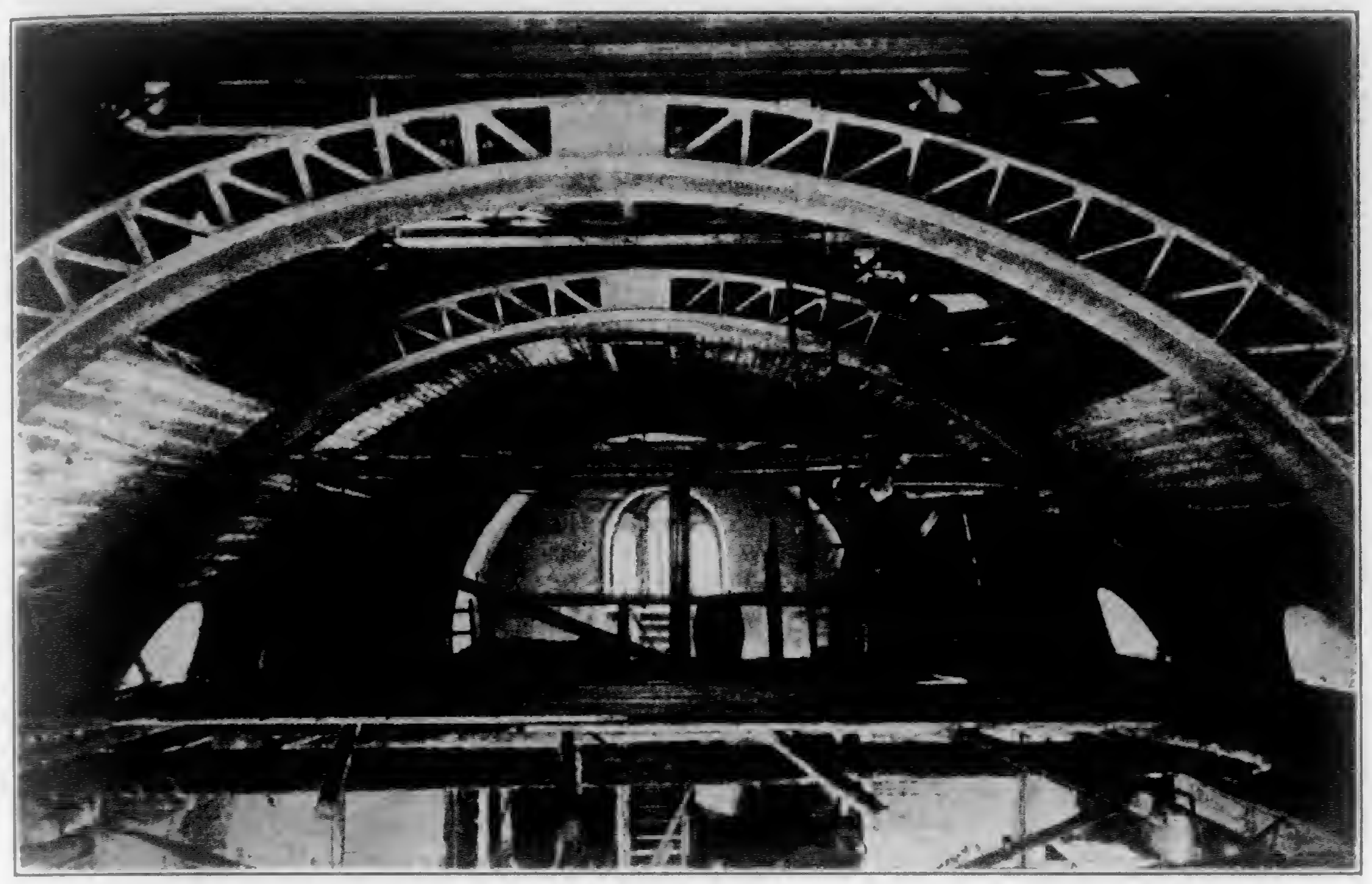
The connections so placed, in spite of their simplicity are sufficiently strong, because the surrounding concrete prevents them from bending and sliding, so, as far as security is concerned, they have the same quality as if connected by rivets.

The lattice girders can be put up for heavy and light loads and spans, as may be desired advantageously and economically for spans from 10 to 120 feet.

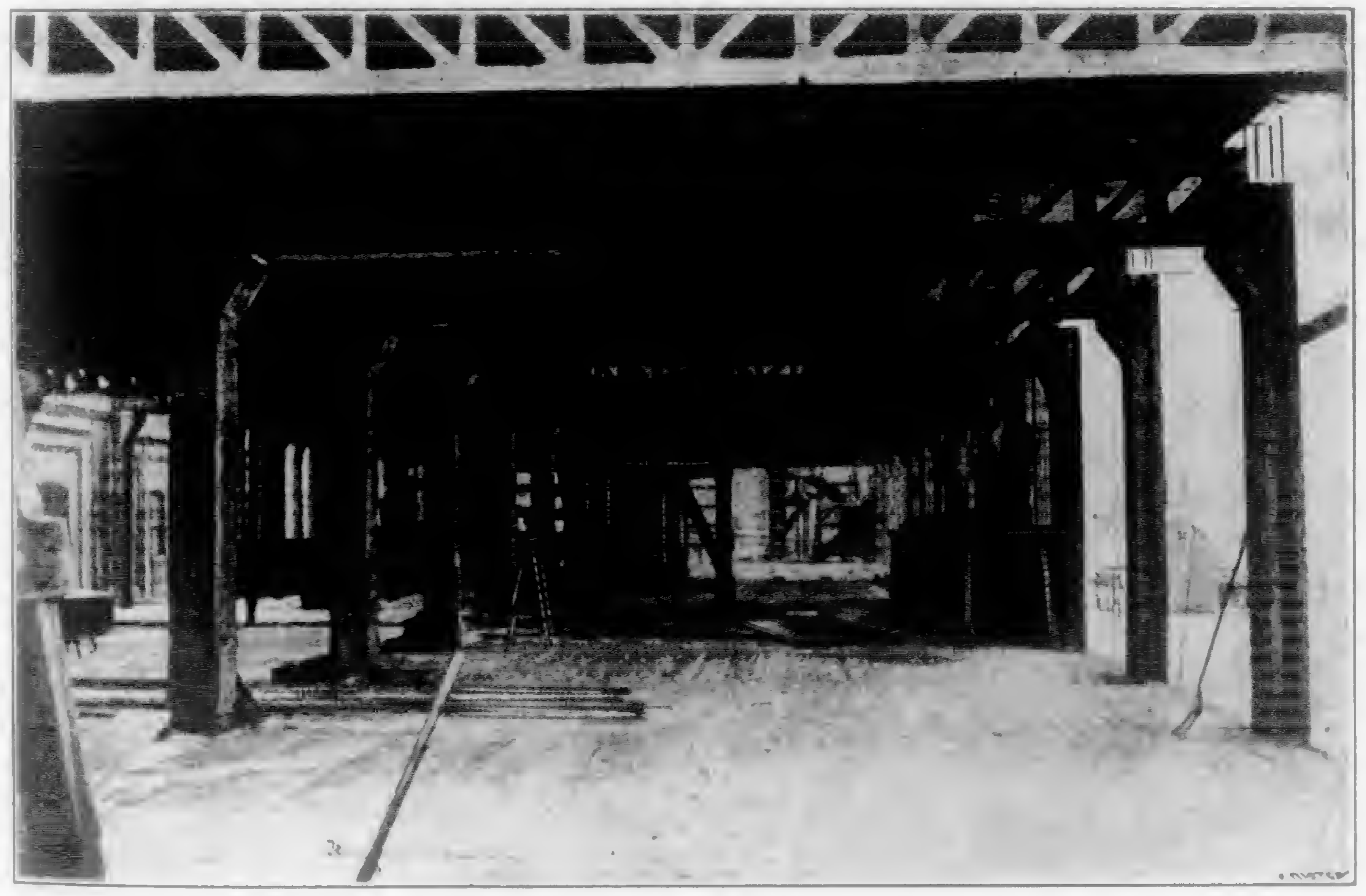
The making of the concrete girders takes place on level ground in the workshop or at the building. The girders are cast in wooden forms in which were placed the steel reinforcing rods and metal or wooden cores.

When the concrete has set, the form is taken away, and the girders kept moist two or three weeks. They then are ready for use and can be brought to the place of building. The recesses and little grooves at top and bottom of the adjacent sides of the floor beams are filled with cement mortar, so that the floor now is a monolithic mass.

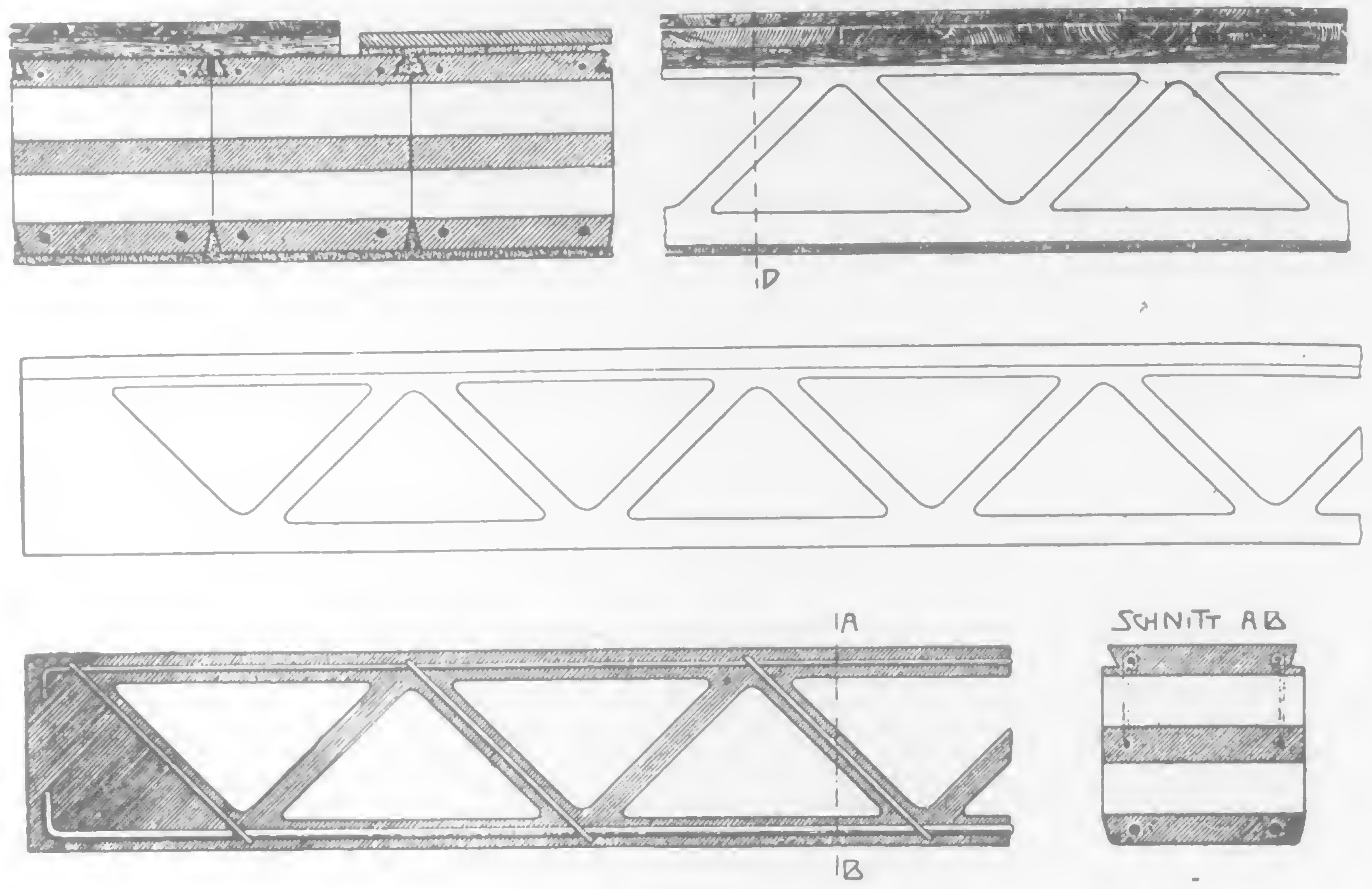
This remarkably simple method of construction demands no great effort nor preparation, so that the manufacturing of the beams is not limited to factories fitted up in any particular way. In most cases, the manufacture of the



Arch for a Church in Aussig in Course of Construction, Showing the Arch Girders With Part of the Roof Beams in Position. Span, 45 Feet; Roof Beam, 18 Feet Long



View Showing Inside Floor Near Completion
Factory Building, Reading, Pa.



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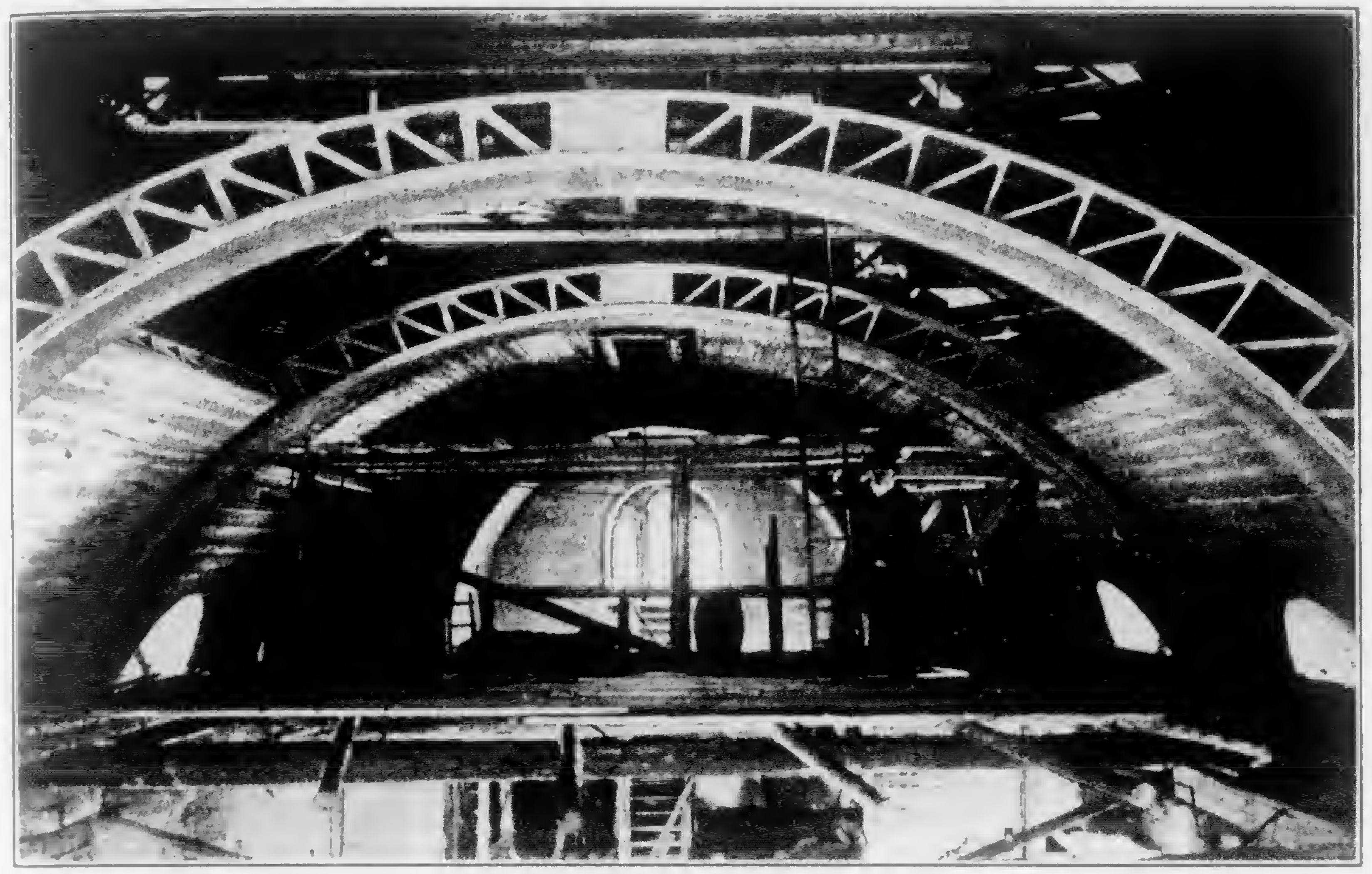

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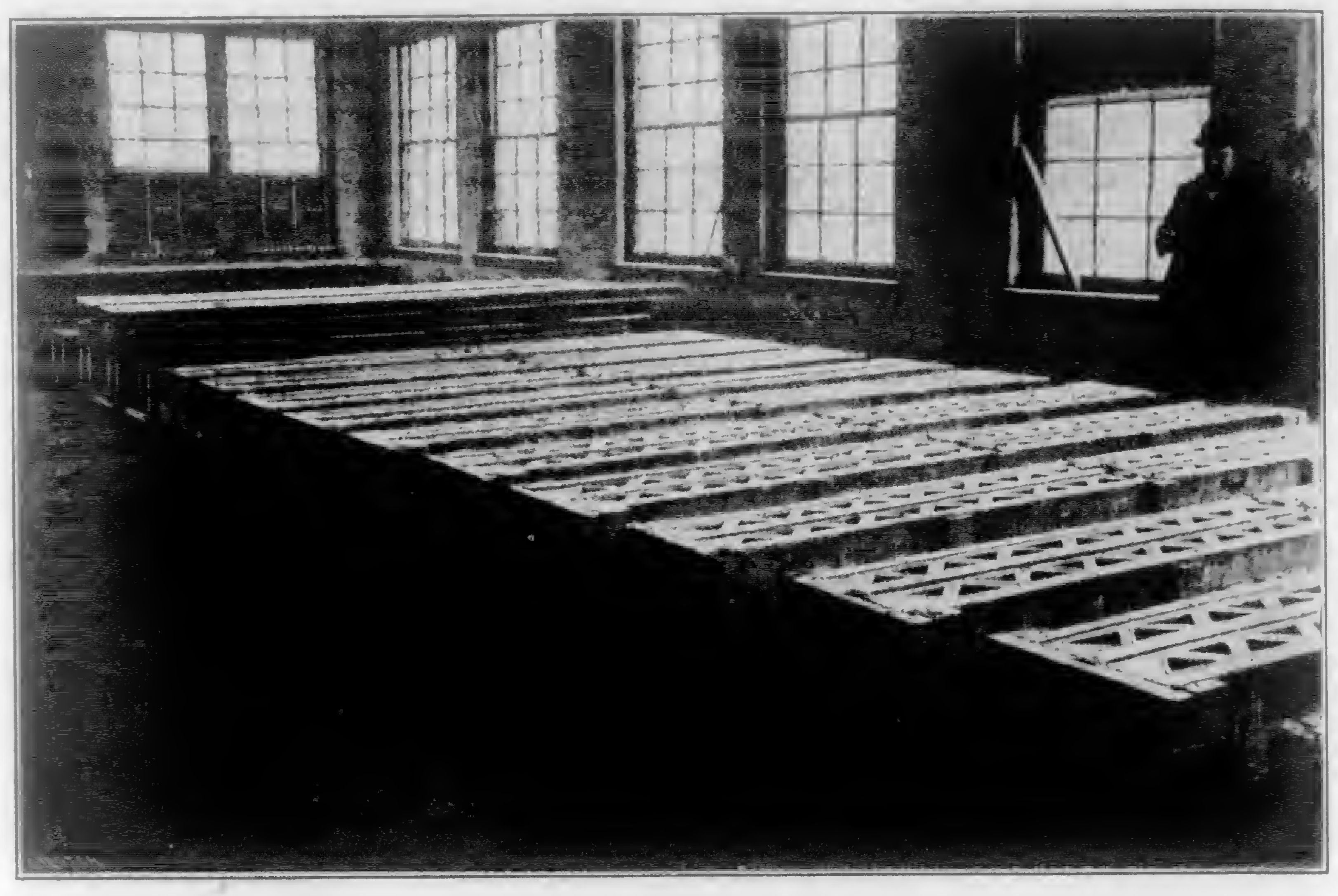


View Showing Floor Beams in Forms

beams and girders can take place directly at the building or in the immediate neighborhood of it.

The application of the beams is particularly manifold. It embraces not only floors, columns, walls and girders for the construction of buildings, but also bridges, docks and canals.

In exactly the same commendable manner it is adapted to arched forms for churches, schools, halls, etc.

In the simplest manner, large rooms can be made architecturally effective, and easily fireproof in reinforced concrete by this system.

For calculating the cost of the beams, the simplest imaginable methods are used. The manner of calculating being similar to that employed for steel lattice girders.

With the correct use of the system, there is a saving of at least 25 per cent in concrete, 10 per cent in steel and 60 to 75 per cent in form and carpenter work.

Compared with any other reinforced concrete system, the cost, with the same strength, is at least 10 per cent less.

If we now take the principal advantage of the system into brief consideration, we will find that this system possesses:

The most perfect control over the distribution of the stress in different members.

The greatest degree of strength, the smallest amount of material used and smallest dead load.

The simplest method of erection in manufacturing and building of beams and girders.

A saving in erection, less cost for work and small incidental costs.

Dispensing with almost all forms and carpenter work at the place of the buildings.

Least construction height between top of floor and bottom of ceiling.

Straight ceiling.

The construction of lattice girders can be applied to all spans.

The Advisability of Constructing Highway Bridges of Reinforced Concrete

By LAYTON F. SMITH, Baltimore, in Concrete

THE question of good roads is being agitated each year more than the year before, and as a nation we are becoming more impressed with the fact that good roads are necessary for the well-being of the country. It is, of course, understood that the United States, being a new country of large area, and for many years sparsely settled with small communities widely separated, did not have the opportunity to construct fine roads before the railroads began to be built; and because the railroads became more extensive and extended all through the country, the need of fine macadam or telford roads was not early appreciated by the great mass of our people.

The farmers felt the need of good roads, but they were too poor to pay for them, while the dwellers in cities found that their money was needed for the paving of the city streets, and hence the suburban roads of America have been considered by foreigners a disgrace to the country. While good roads were desirable, the cost of building and maintaining them rendered their construction on the part of the counties in the various states practically impossible. Some of the important roads were kept in various conditions of good repair, but the balance were permitted to be whatever resulted from the character of soil over which vehicles passed in various kinds of weather and with varying frequency. As the cities produced a class who owned horses and carriages and desired good roads over which to drive in the neighborhood of the cities, action was taken whereby a few of the roads leading from the cities were rendered more or less fit for pleasure driving for a radius of about ten miles from the city limits. There were a few turnpikes which were kept in good repair for most of their length, but since the limit of pleasure driving is circumscribed and few people drive more than about twenty miles in an afternoon or evening, little care was given or money expended on the roads not contiguous to the cities.

When bicycling was popular and cyclists rode centuries, the condition of the roads became known to others than the farmers, and efforts were inaugurated to improve the highways, which resulted in much benefit to the country at large, but especially to the farmers who chiefly used the roads. Many counties now have road engineers who are employed to see that the best roads are obtained for the money expended, and many states have road laws, whereby the State will bear a certain proportion of the cost of road improvements in the various counties.

The greatest factor which is now contributing to the improvements of the roads is the automobile, owners of which are not satisfied to ride within the radius of twenty miles of a city, but who want to ride for hundreds of miles in their touring cars, and hence are agitating for good roads everywhere.

One of the requisites of good roads is good bridges, and in the past most of these have been on a par with the roads, very poorly constructed, and usually in very bad repair. Most of the longer spans are now steel trusses with wood floors, while of the shorter spans a few are stone arches, but by far the larger number are constructed of wood stringers, with plank floors nailed thereto. There are many counties which have several hundred of this latter class of structure, which are continually wearing out and requiring to be replaced or repaired; they are also the cause of many accidents, resulting in injury to people and property and suits for damages against the counties. If these bridges could be abolished entirely, so as to stop the continual drain on the counties for their maintenance and the payments of damages resulting from suits which they occasion, both the counties and the individuals would be benefited; but there must be some method adopted to carry travel over streams and gullies, and hence there must be bridges of one class or another. Many counties have constructed stone or brick arches wherever possible, but such construction is not always suitable, because the conditions may not permit of an arch, which is itself expensive, and in most cases in order to replace the wooden bridge with an arch it would be necessary that the stone abutments on which the wood stringers rested to be torn down to be replaced by abutments suitable to receive the thrust from the arches. This is undesirable, for if the original abutments are in good condition or can be rendered serviceable for vertical loads at small expense, it is not economical to tear them down to be replaced by other abutments suitable for arches. At other times the construction of an arch might restrict the opening more than would be desirable or safe.

What is wanted is a construction which will replace the unsatisfactory and dangerous wooden part of the structure, which will rest on the abutments already constructed, which will not restrict the opening which it spans, and which will be indestructible and not need repair. The only type of bridge which will meet all these requirements is a reinforced concrete girder or slab structure, and more and more of these bridges are being built each year. At first thought one is inclined to think that the cost of a reinforced concrete girder or slab bridge is much greater than the cost of a new wooden structure such as it would replace, and such is the fact in some localities, but in many places the cost of a reinforced concrete structure will prove less than a preliminary estimate might indicate, for frequently all the sand and gravel needed in such construction can be obtained from the bed of the stream which it spans, and the lumber in the wood bridge can be used for the rough centering.

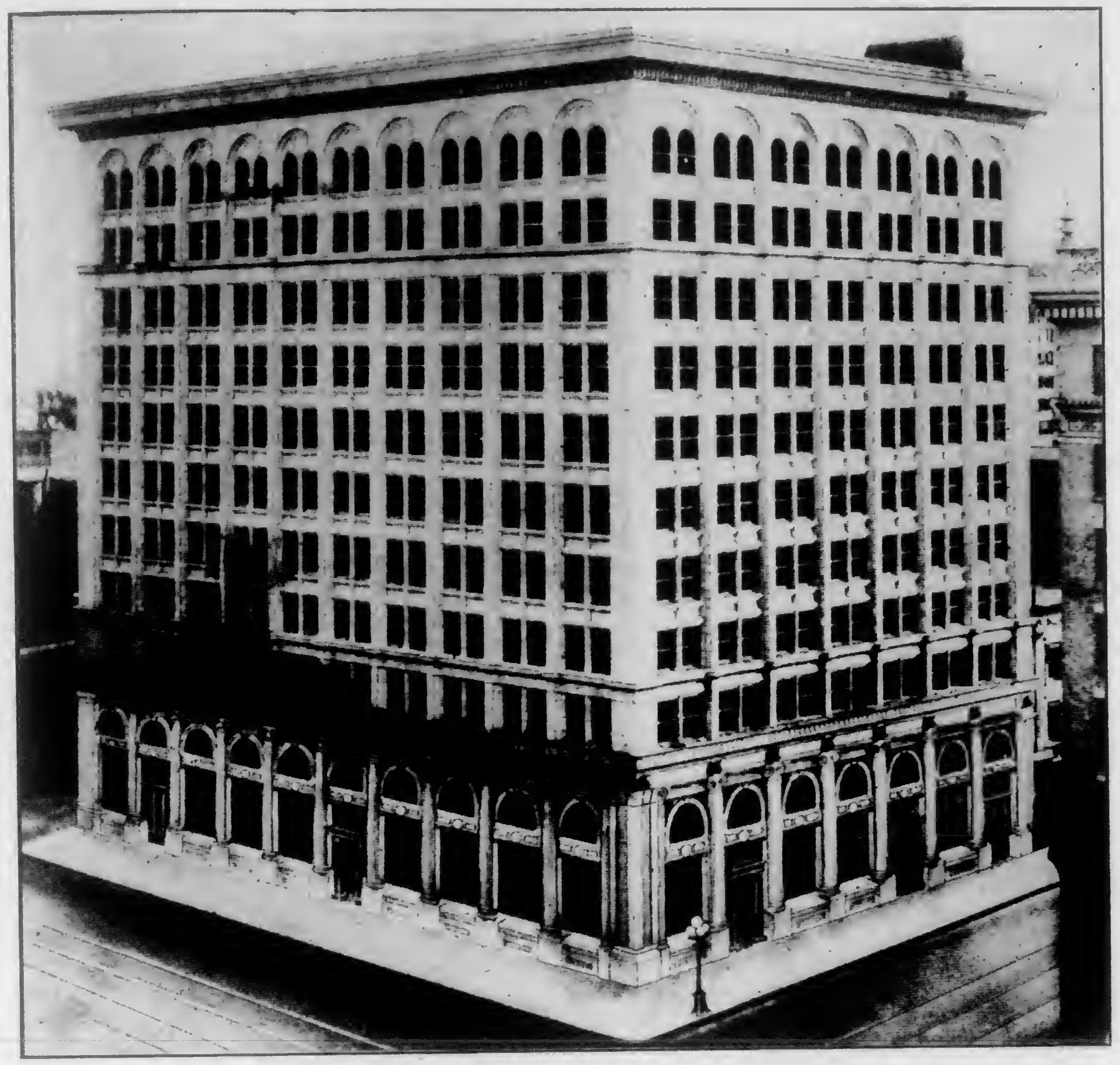
From experience the writer would advocate the use of a bar to which the members which are to resist shear in the finished structures are rigidly attached, and that the work be done by the counties' own forces. By using such a bar as described there can be no chance of the shear-resisting members being left out of the structure, and by using the counties' own forces the superintendents will become familiar with the plans and construction and do better work; at the same time the road engineer will exercise more thorough control and supervision over the structure.

* * *

Cost of House Construction

As indicating the advance which has occurred in the past few years in the cost of house construction in certain sections of the country, at least, the following from an Evansville, Ind., paper is impressive:

"It was only a few years ago," said a local architect, "that the estimate on a room was $200. That is, if a man wanted to build a five-room house we figured it would cost him about $1000 for average construction. Today the price is practically double, due to the increase in the price of building material and the higher wages paid to the contractor and workmen. We now estimate about $400 to each room, making the cost of a modern five-room house about $1800 to $2200.



Security Savings Bank Building, Los Angeles John Parkinson and Edwin Bergstrom, Architects
Equipped With Otis Elevators Machinery and Electrical Co., Heating Engineers

Sand-Lime Brick

The manufacture of sand-lime brick is rapidly becoming an important industry in the United States and may become as profitable here as it has been in Germany for the last ten years. A sand-lime brick is essentially a mass of sand cemented by hydrous lime silicates. The bricks can easily be made with a crushing strength of over 4000 pounds per square inch, exceeding in this respect some sand-stones, also with a tensile strength of over 200 pounds per square inch, and they withstand severe freezing, thawing, and fire tests. When made with pure sand their color is white, but by the addition of manganese or graphite in varying proportions, gray or pink brick may be produced. Both common and front bricks are made. Their chief merits seem to be their white color and their somewhat lower cost of manufacture than that of clay or shale bricks used for building fronts and for ornamental purposes. It is claimed that they make rigid structures and that they are in every way safe and satisfactory as building material.

A plant for making sand-lime bricks, near Sayreton, just north of Birmingham, Ala., is briefly described in a paper by Charles Butts in the annual economic bulletin (No. 315) of the United States Geological Survey for the year 1906. The paper includes a list of publications dealing with the subject of sand-lime bricks.

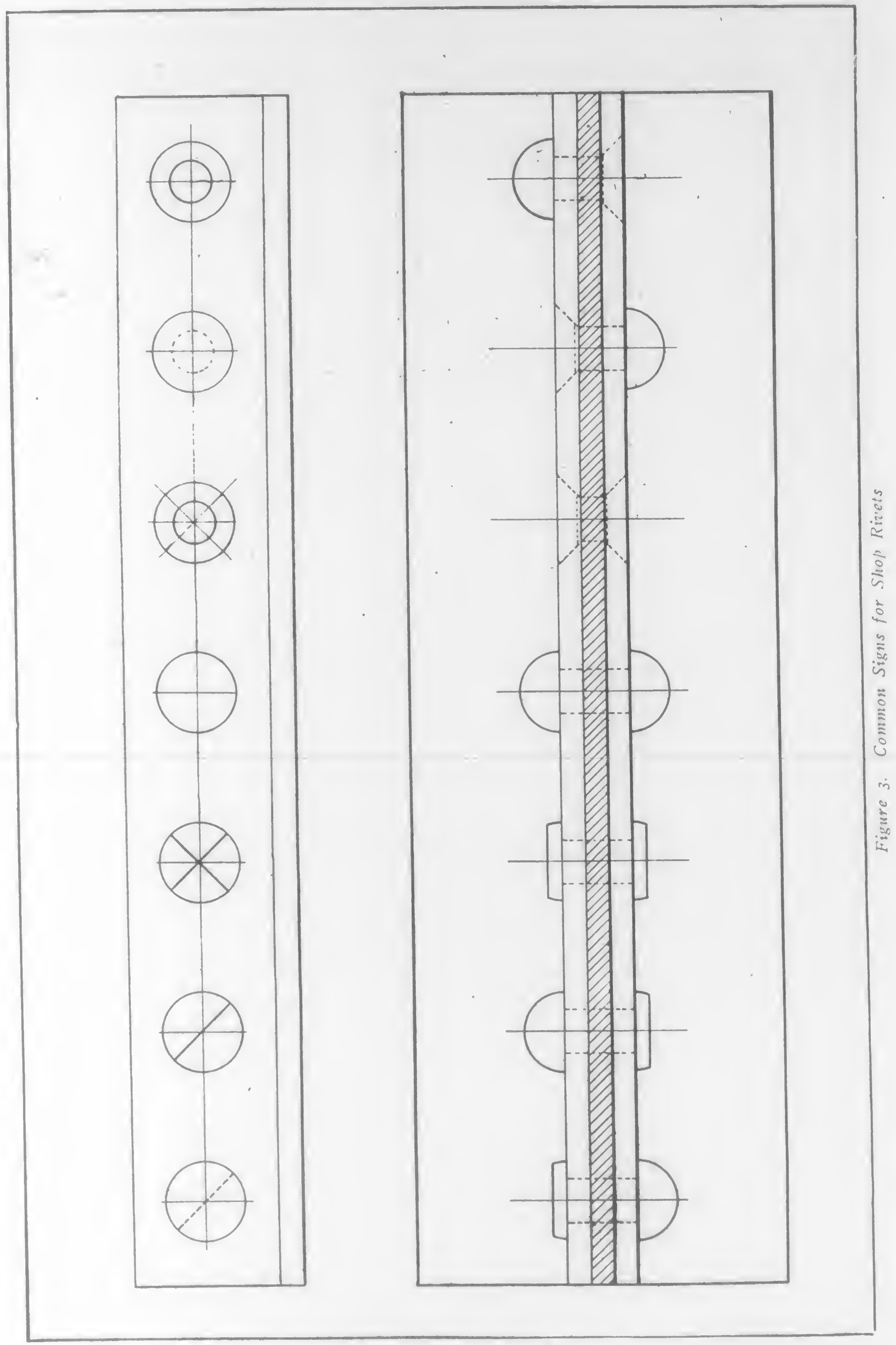


Figure 3. Common Signs for Shop Rivets

A Few Notes on Riveting

By E. O. RITTER

AN ESSENTIAL feature in the construction of steel buildings and bridges is the manner in which the different parts are fastened together. This is frequently done with bolts, but a much more satisfactory job results when rivets are used. The latter are either driven by hand, or by machines operated by air, steam or water power. Whatever method is used, the course is practically the same.

Fig. 1. Showing Rivets Driven "Too Short", Also Heads Not Concentric With the Holes

The rivet is heated, placed in the hole through the pieces to be fastened together and held in place while a head is forged on the projecting shank. In order to get good rivets it is important that the holes in the different parts through which the rivet must pass, should match exactly. A good way to insure this is to punch all holes one-eighth inch or three-sixteenth inch smaller than desired, and ream them to the proper size after the different parts are assembled. This makes the holes perfect and does not necessitate the use of drift-pins, which are used to force through holes that do not match, enlarging them and often tearing or otherwise injuring the metal around the hole, and which is likely to start crystallization.

The finished hole should be one-sixteenth inch larger than the diameter of the rivet to be used, and all punch or reamer burrs should be removed from the sides of the holes. Machine riveting is cheaper and better than hand-riveting, and can be very easily distinguished, particularly so when rivets have to be taken out. The steady pressure brought on the rivet by the machine, holds it tightly in place and compresses the shank into and completely fills the irregularities of the hole, which is not always the case with hand-riveting. By whatever method the riveting is done, it is important that the material to be riveted is first drawn tightly together with bolts, and the bolts removed as the rivets are inserted.

Care must be taken in the heating of the rivets so as not to burn them, as burned rivets are weak and brittle, and it is almost impossible to detect a burned rivet after it has been driven. In many cases the head may look perfect, while the shank is badly damaged. The burning of rivets is not always accidental. Many times if rivets are a little too long to exactly fill the snap, the "heater" will "waste" them; that is to say, bring them to a melting heat, so that parts will crumble off. This is very bad practice for steel rivets, as they should never be worked at a greater heat than "orange-color." Iron rivets may be brought to the

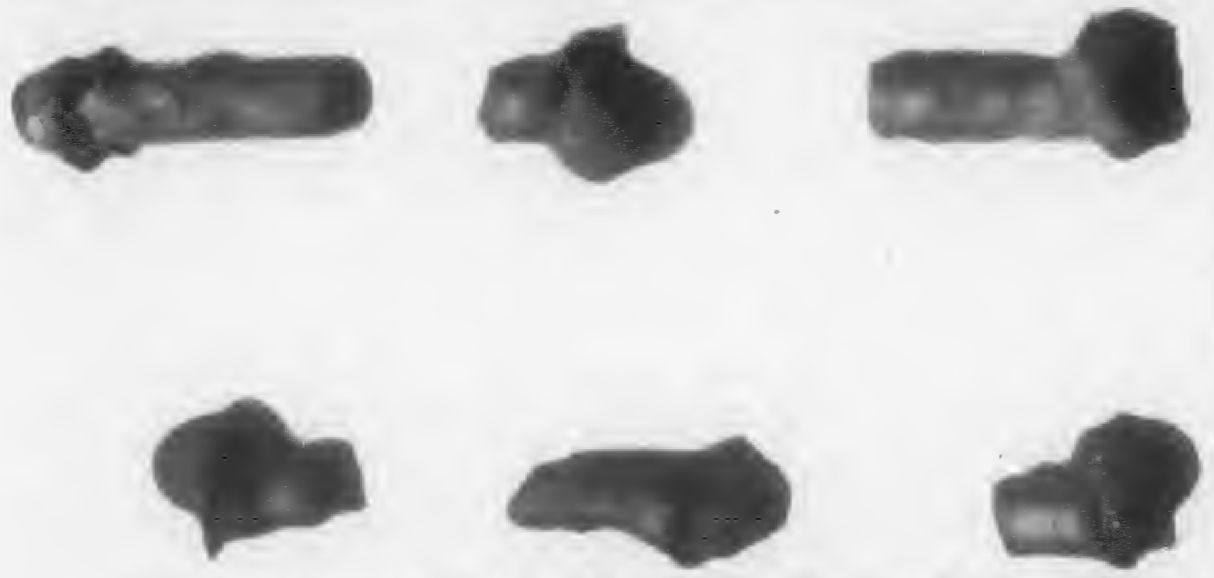


Fig. 2. Showing Rivets Defective for Various Reasons; Also Burned Rivet Before Driving

waste or wash heat without serious injury. In hand-riveting it is important that the rivets be uniformly heated all over, and not hotter on the point than on the head, otherwise the blows which are sufficient to expand the metal and cause it to fill the hole will do so only on the hot end, leaving the other end loose in the hole.

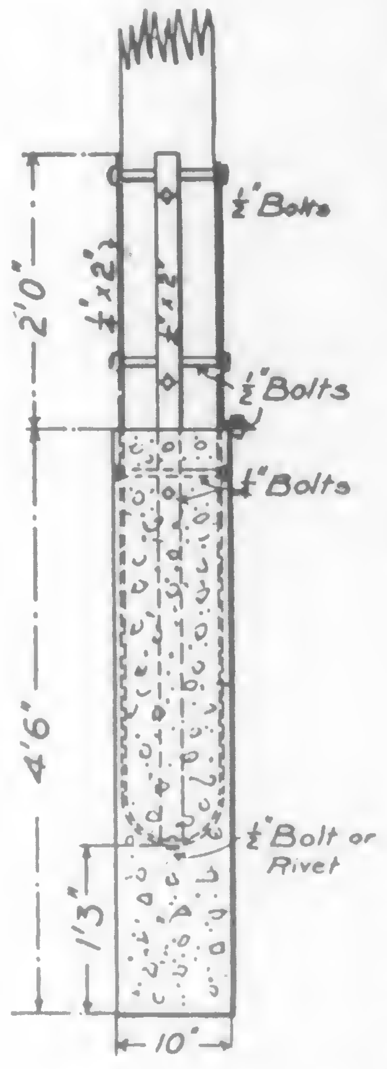
Loose rivets are often made to appear tight by going around the edges with a caulking tool, or chisel, and frequently by placing a snap sideways upon the rivet and striking it one or more blows with a hammer. This simply bends or wedges the rivet in the hole, does not make it any better, and should by no means be allowed. After a little practice, loose rivets can easily be detected by tapping them with a small hammer. The hammer will bound from a tight rivet, but not so from a loose one, and one can tell by the jar of the handle, whether the rivet is loose, even where no rattle is heard, nor movement detected by the eye.

Proper attention is seldom given to field riveting. Many architects are particular about inspection of rivets in the shop, insisting that they all be tight, and perfect in other respects, while little or no attention whatever, is paid to the riveting of field connections, the same being left entirely to the discretion of the workmen. This is certainly not good practice, as a structure is no stronger than its weakest point, and if the workmanship is to be good in one instance, why not make it so in its entirety.

* * *

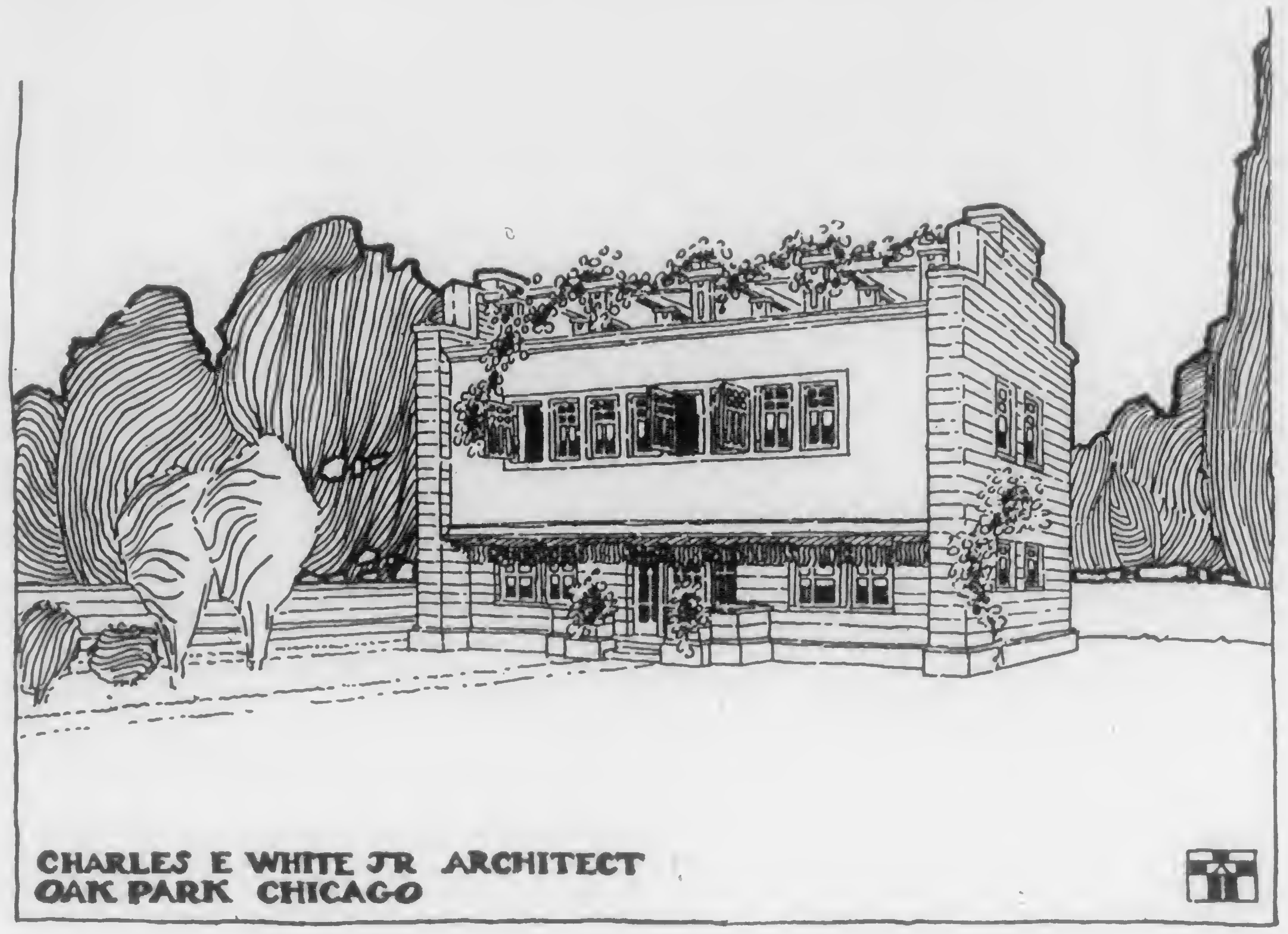
Cost of Making and Setting Concrete Bases for Wooden Poles

THE accompanying drawing from Engineering-Contracting shows a concrete base for transmission line poles invented by Mr. M. H. Murray of Bakersfield, Cal., and used by the Power Transit & Light Co. of that city. Their bases are molded and shipped to the work ready for placing. They weigh about 420 lbs. each. One base requires 37½ lbs. of 2x¼ in. steel bar, 40 lbs. of Portland cement, 3 cu. ft. of broken stone or gravel and enough sand to fill the form or mold, which is 10x10 ins. by 4½ ft. Unskilled labor is employed in the molding and two men can mold ten bases per eight-hour day. The cost of molding is as follows per base:



2 men at $2 per day	$0.40
Brace irons per set	2.50
1/9 cu. yd. stone at $4.05	0.45
40 lbs. cement at 1½ cts	0.60
Sand	0 15
Total cost	$4.10

In the work for the company named above two men at $2 per day each set five bases in eight hours, making the cost of setting 80 cts. per base. The bases were sunk to a depth of 3 ft. 3 ins. In many cases they were placed under poles without interrupting service by sawing off the pole, dropping it into the ground, placing the new base and setting the sawed-off pole on it and bolting up the straps.


CHARLES E WHITE JR ARCHITECT
OAK PARK CHICAGO

A Fireproof Dwelling of Hollow Tile

By CHARLES E. WHITE, JR., Architect

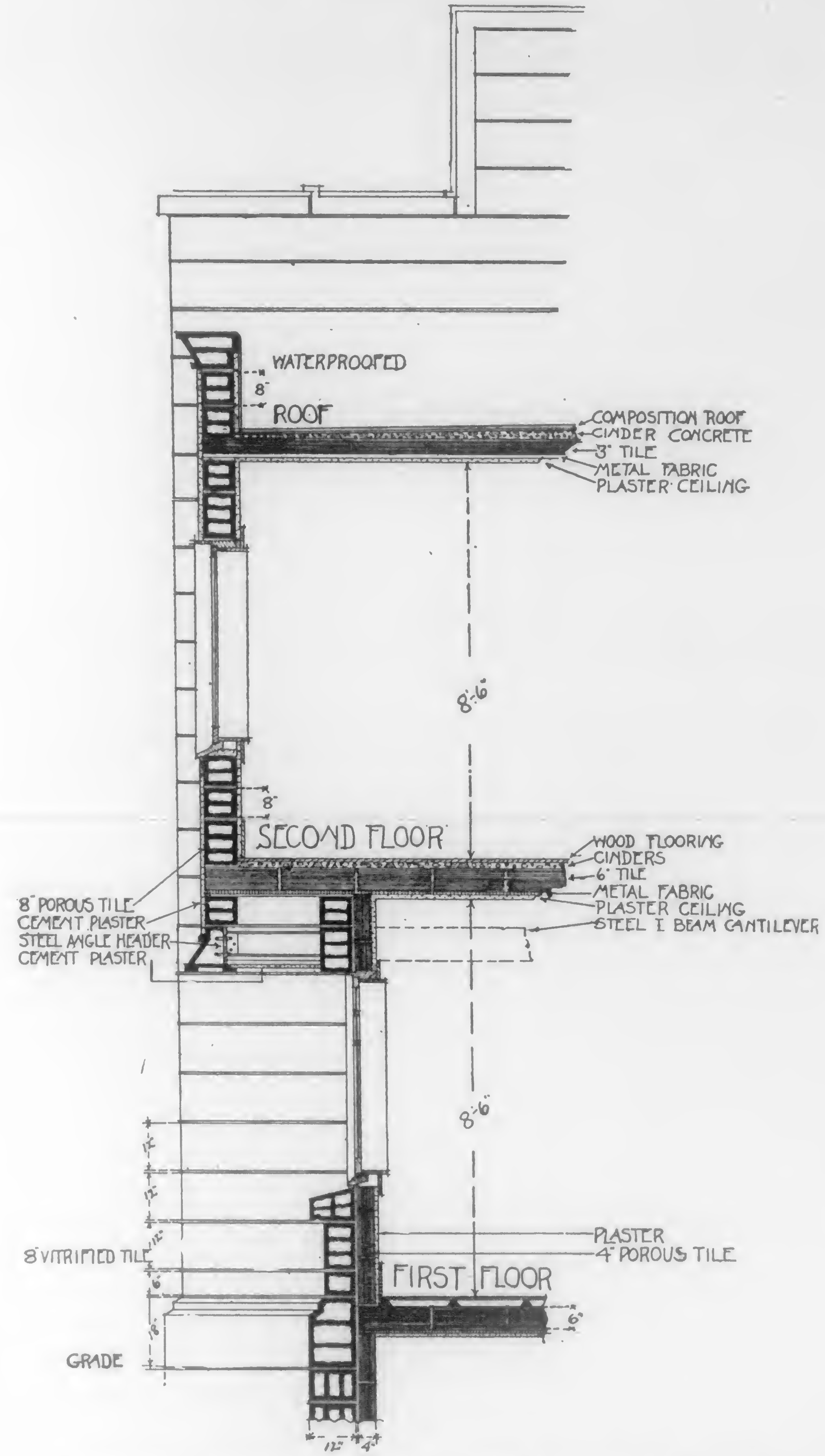
OF ALL the materials for dwellings of masonry construction, materials of clay have been the most used. Of all clay materials, brick has been generally selected by both architect and owner. Brick successfully solves the problem as to appearance and permanency.

Tile has now come to be a marketable and easily obtained material in most markets through its increasing use as a fireproof covering for large buildings. It is only within a short time, however, that, in this country, it has been seriously considered as a substitute for other more commonly used masonry materials.

The slight demand for tile in dwelling construction is chiefly the fault of the manufacturers. Their attention has been almost entirely confined to the exploitation of their material merely as fireproof covering. The demand for tile for this purpose is enormous, so we cannot expect the manufacturers to take the care and time necessary to put their material on the market, and create for it a demand for its more universal use as an all around masonry material.

On the other hand, the architects, inclined to conservatism, cannot be expected to go out of their way to exploit a material with which they are not familiar. The good points of tile have been demonstrated to them so far as fireproof qualities go, and they have been quick to seize the material for this use, but its more general use as a constructive material has not occurred to the profession at large.

In spite of lack of exploitation on the part of manufacturers, and lack of appreciation on the part of architects, tile is today one of the best of materials for general use in masonry structures, says Fireproof Magazine.



Vertical Section of Fireproof Dwelling, Showing Materials and Construction

The first point in its favor is its reasonable cost. Wherever clay is to be found, tile can be manufactured—and this is pretty much everywhere.

Further points of especial interest to architects are color and texture. All shades of color can be obtained, from light buff to deep chocolate brown, depending upon the chemical consistency of the clay in the different parts of the country. Any or all textures known in architecture can be utilized.

Another important point in favor of tile is its plasticity. Blocks can be furnished in any size and any shape. Plain or molded surfaces are easily produced. Any bit of ornament that a sculptor can model with his thumb and fingers, is just as easily produced in terra cotta as in the sculptor's sketch.

The question of permanency is successfully answered in terra cotta. Fire and wear make no impression upon it. The large size of the units, as compared with brick, means less joints, less labor, and increased architectural appearance.

Perhaps the greatest of all facts concerning tile especially appealing to the architect is its factor as a new material—a material still in the vigor of its youth, as concerning universal application. No weak, hackneyed, misfit use of tile has appeared yet, and the designer feels that a fresh opportunity has been given him to think and work in a new medium. The very nature of tile, different as it is from all other materials, is an incentive to him to strike out into new paths, unhampered by false ideas of precedent, or the restrictions of habit. Sympathy and sense are the only qualifications necessary in the architect, when working in tile.

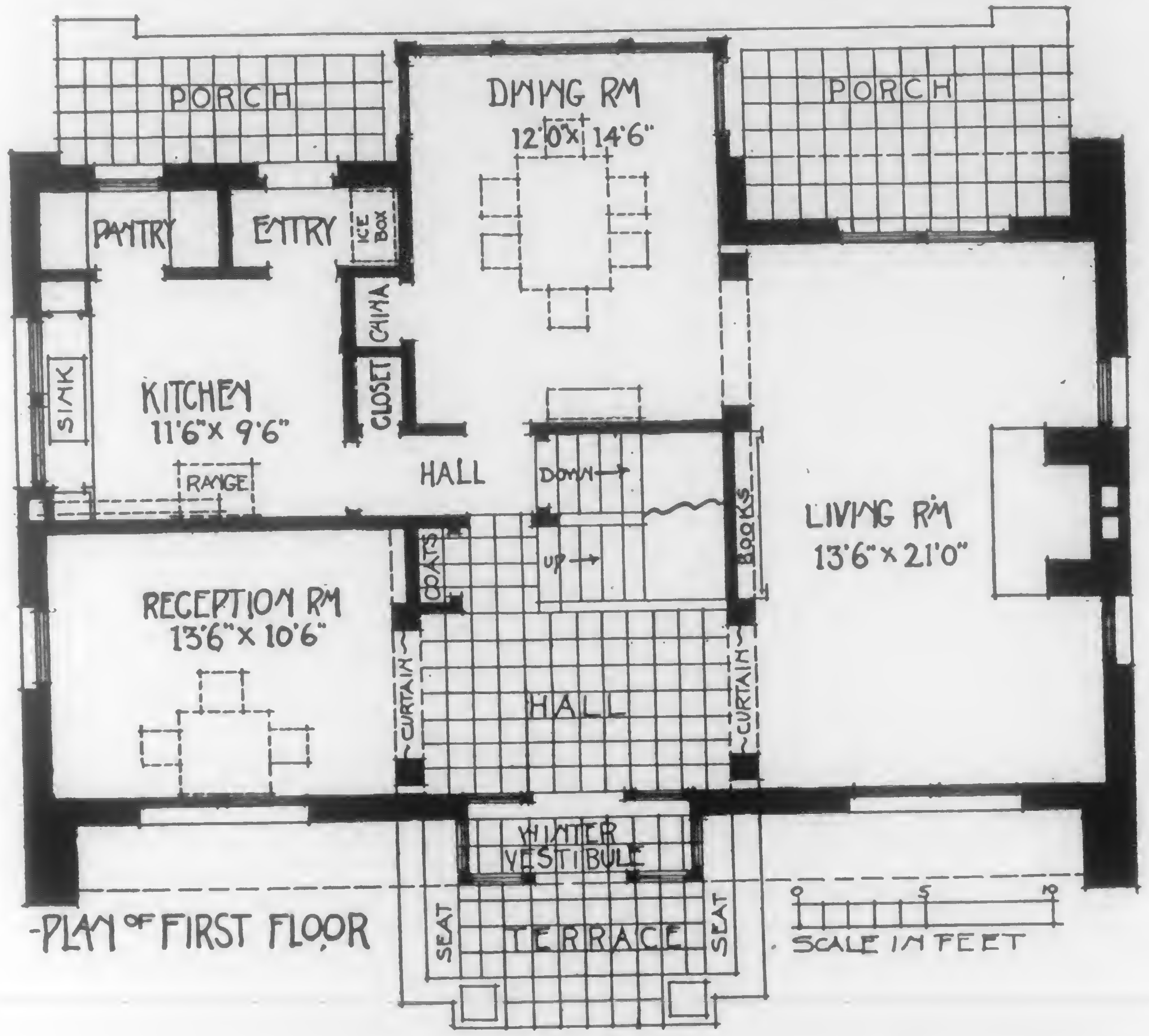
The project as illustrated herein indicates an attempt to use tile of stock pattern in a consistent, simple manner, without extravagant architectural accessories. Moderate cost, architectural appearance and utility and constructive permanency have been especially borne in mind.

Hollow tile blocks as a basis of construction, covered with cement plaster, have already been used in dwelling house construction. This project includes the use of the material in like manner, and also its use as an independent material without any outside covering.

Tile, with its beauty of color and texture, and its splendid weathering qualities, need not be covered with any other material to obtain either permanency or architectural appearance. Indeed, one of the greatest points in favor of tile is the breadth of its scope in the interpretation of the architect's ideas. Cover it, if you will, or leave it in its natural state; with either method it proves an ideal medium.

The tile patterns used in this design are all stock patterns, selected from the manufacturer's catalogue, with the exception of the case course and the two molded courses at the top and bottom of the second story projecting walls. Cornice moldings are carried in stock, but none of them was adaptable for this project. Special moldings, of simple cross section, are easily made up from the architect's drawings at moderate cost. In the designing of cornices, it is not, therefore, necessary to confine one's self to stock patterns.

The wrong way to design a building of tile is to use a plan conceived for a building of frame construction and attempt to fit it into a design for tile. Such a method cannot, by any amount of ingenuity, give successful results. A South Sea Islander cuts but a sorry figure in a swallow tail coat, no matter how picturesque and admirable he may be in his native costume. So it is in architecture—a building designed for one material cannot be successfully executed in any other. A tile building should express the simple solidity of masonry. Its sympathetic use along this line will be organically right.



-PLAN OF FIRST FLOOR

This design was conceived, broadly, as a quadrangle in plan, with a solid wall at each end, terminating in a chimney top. These end walls and the exterior walls of the first story are of vitrified hollow tile, eight inches thick, with the cells extending horizontally. Vitrified tile of this pattern have an impervious semiglazed surface, a rich chocolate brown in color. Such a surface is attractive and permanent, and insures a damp-proof wall. The tile should not be selected for uniform color, as the variation of tone is an excellent quality in the wall. It produces an agreeable texture, quite necessary in the design.

The first story exterior walls are lined with four-inch hollow porous tile. The inside partitions and the exterior walls on the front and rear, second story, are also of porous tile, three inches thick, for the inside partitions, and eight inches thick for the exterior walls. This porous tile receives the plaster direct, without laths or furring strips. Any moisture coming through the joints in the wall cannot get through the porous tile to stain the inside plastered surface. The trim is nailed directly to the tile with corrugated nails.

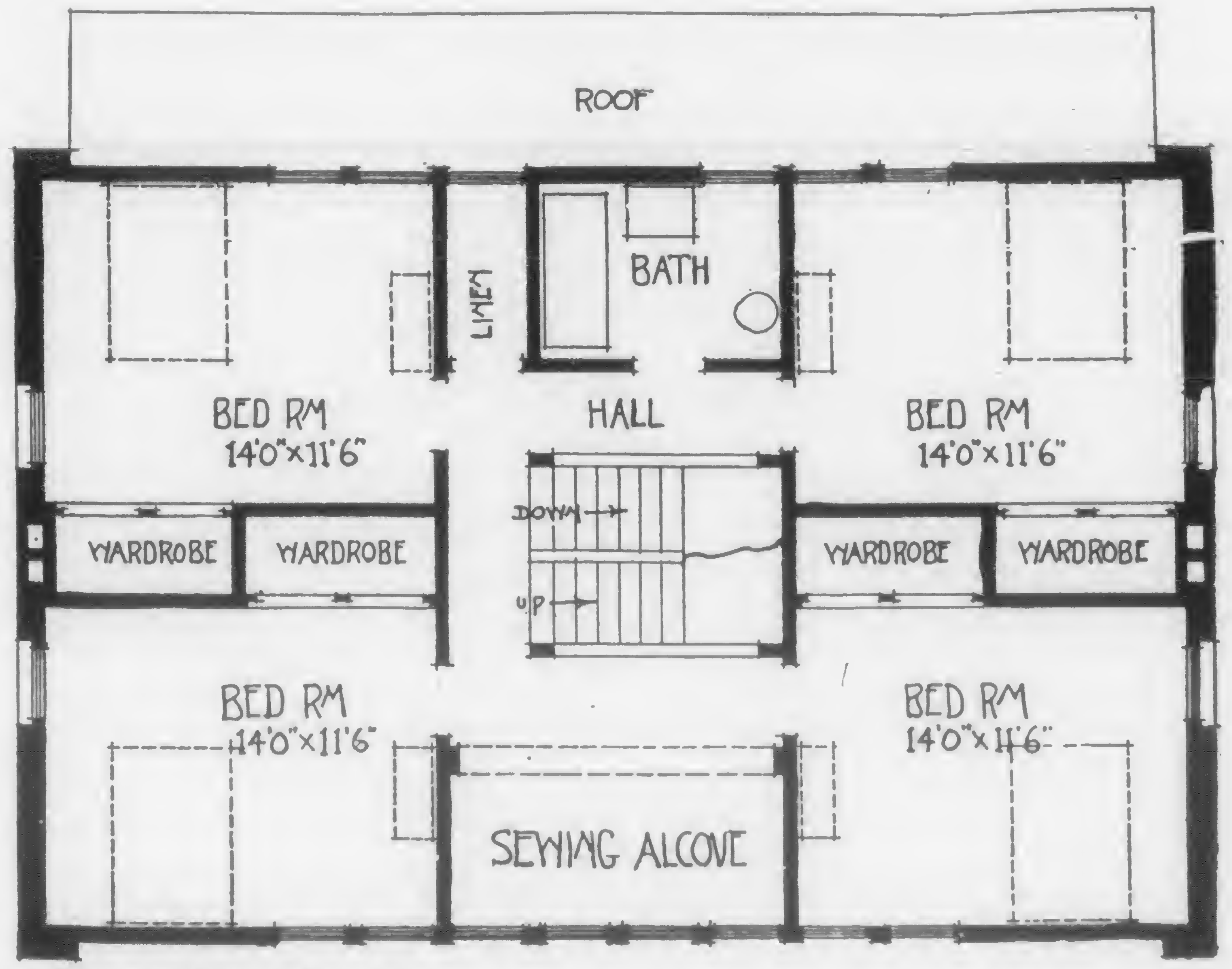
The front and rear exterior walls on the second story are covered on the outside with cement plaster, applied directly to the porous tile.

To withstand the shock of slamming doors, in the thin inside partitions, the horizontal joints in the partitions, for a distance of two feet from the door frames, are reinforced with pieces of galvanized metal fabric, imbedded in the joints.

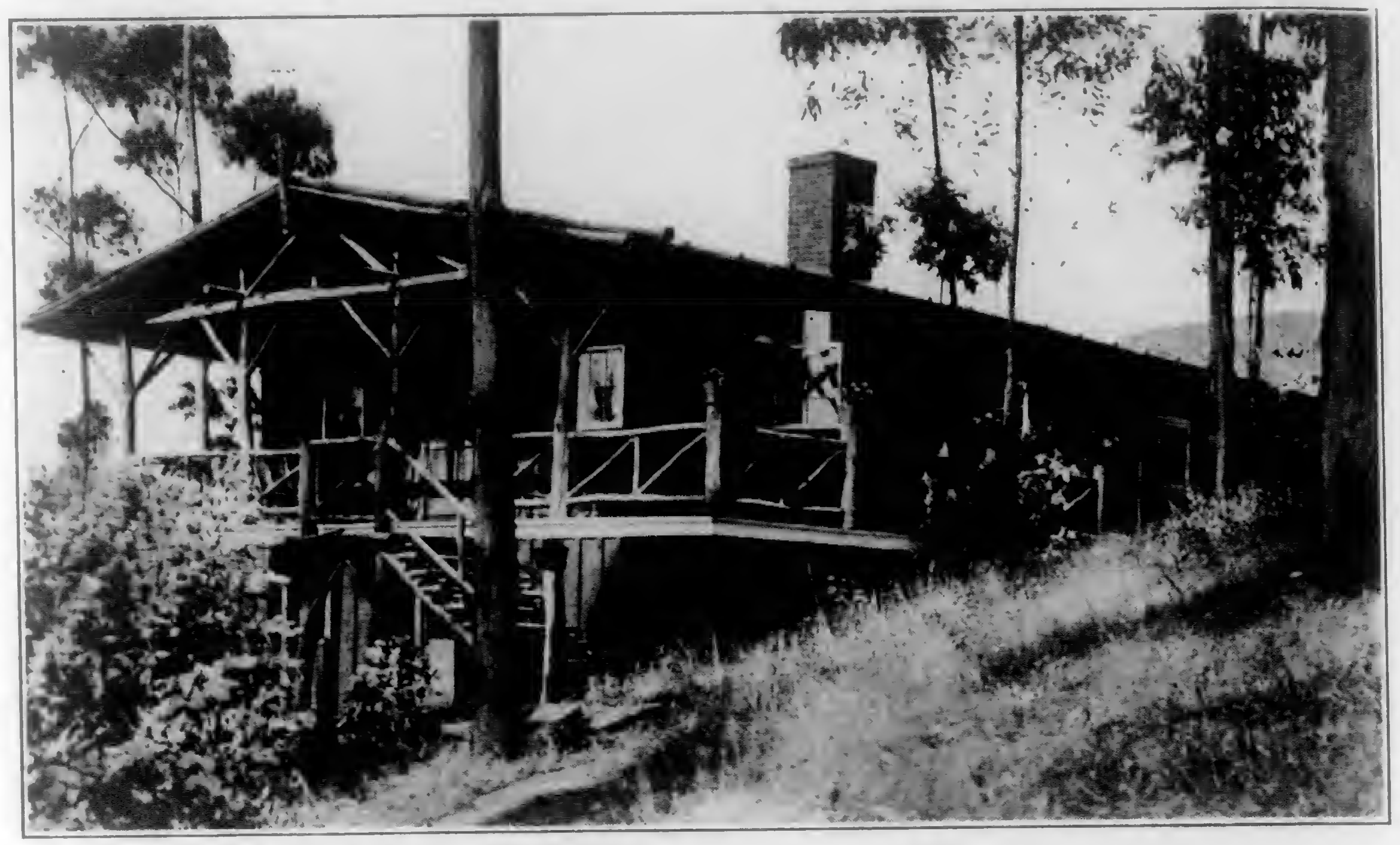
The fireproof floors and roofs are supported directly upon the porous tile lining of the outside walls. To withstand this greater load these tiles are laid with the cells vertical. Under ordinary loads the tile may be laid with the cells horizontal. The tile in the inside partitions are also laid with the cells vertical for convenience in extending water, gas and heating risers to the second story.

The floors and roof are of the system of fireproof construction known as the "Johnson" system. This system consists of metal fabric, reinforced with steel rods. The fabric is plastered underneath, and this plaster is the ceiling of the rooms below. The top of the fabric is covered with hollow tile, finished with cement, or with the ordinary wood floor boards, as desired. When wood flooring is used, furring strips bedded in cinder concrete are laid upon the tile, and the wood flooring is applied to the furring. This system of construction can be designed to withstand any load, extending over varying lengths of span, by increasing or decreasing the size of the reinforcement in the fabric and the thickness of the tile blocks.

In a fireproof design, the flat roof is the most practical, as it eliminates a great deal of structural steel that would be required by a sloping roof. The hollow cells of the roof tile perfectly insulate the building against heat and cold. The roof is laid precisely like the floors. Cinder concrete is applied to the top side of the tile, and graded to drain the roof to the four corners of the building. Conductors extend from these corners down through the hollow piers. The coping walls surrounding the roof are strengthened on the front and rear with reinforced metal lath and plaster. The plaster is covered with waterproof metallic paint, so that the roof water, in a



-PLAN OF SECOND FLOOR



The Pretty Bungalow of W. J. Watson, Oakland

pouring rain, cannot permeate the wall. A flat roof provides an excellent opportunity for a roof garden. At moderate cost, upright supports, with horizontal timbers overhead, can be erected, on which to train vines and flowers. The house owner can thus add another bit of comfort and charm to his home.

All windows of ordinary width, in a tile building, may be covered with flat tile arches of stock pattern, without the use of supporting steel. In this project the long group of windows on the second story is covered with an angle iron supported by pieces of gas pipe set up vertically in the hollow window mullions.

It will be noticed that the loads under the steel beams, projecting cantilever fashion for the support of the overhanging second story, are concentrated on the piers below. To withstand this additional load these piers consist of vitrified tile, with the cells extending vertically. Such tile are carried in stock by the manufacturers for work of this character.

With the firm masonry base of a fireproof floor it is an easy matter to lay a finished tile floor in halls and bathrooms, and in the hearths of fireplaces. A beautiful red, dull glazed tile, twelve inches square, can be obtained for this purpose.

As the designing and building of tile buildings progresses, we may expect that, for more pretentious designs, the manufacturers will provide stock tile units, of all sizes, with surface glazes in many colors. The time is approaching when we may go into the open market and select building tile in the beautiful green, yellow, brown and red tones, already obtainable in architectural terra cotta, and the streets of our towns and villages will sparkle with color. Any mason can lay tile. It only remains for the owner and his architect to appreciate it, and demand it, when it will be forthcoming.

Fairmont Hotel, San Francisco

Woman Architect Who Helped Build the Fairmont Hotel

By JANE ARMSTRONG, in the Call

"IS THE building really in charge of a woman architect?" I asked the foreman, who was directing some finishing touches to the ballroom of the Fairmont Hotel. The man read me a powerful sermon of just three short sentences, punctuated with the earnestness of a reform orator. "An architect's an architect," he said, "and you can count them all on the fingers of one hand. Now, this building is in charge of a real architect and her name happens to be Julia Morgan, but it might as well be John Morgan."

Which statement is not as sphinxlike as it looks in type. Illuminated by the light of the man's countenance its meaning is crystal clear. Here was an artisan who would not parse "work" as feminine gender. To him it was work well done, and what was the use of dragging in a petticoat?

When the "master of a good workman shall set us to work anew" I am sure that foreman will draw "the Thing as he sees It for the God of Things as They Are!" Else how could he divest himself of all masculine prejudice and insist that it is "Julia Morgan, architect," not "Julia Morgan, woman architect."

And while I waited for Julia Morgan, architect, I ruminated upon woman's province and power. There was once a small boy who wouldn't play with "sissies," and so I had a very dismal time of it until one dazzling day he discovered that I could really spin a top. I didn't just spin it "fine for a girl." I could make it sing as loud and long as the chubbiest fisted boy on the block, and forthwith I was admitted to the mighty Brotherhood of

Top Spinners. And since men are only boys grown tall I fancy that when a woman enters the arts and sciences and achieves according to the lines laid down for her brothers she is duly and justly accredited to the craft.

On the heels of this conclusion came Miss Morgan herself—a small, slender young woman, with some thing so Quakerish about her that I felt all preconceived notions come tumbling about my head. I knew that Julia Morgan was a Beaux Arts graduate, and through my mind there trooped a bizarre procession of girls who have studied one thing or another in Paris. They usually come home dressed in a color scheme of the impressionistic school, with their talent merely a by-product of a wonderful new set of mannerisms and a novel and fuzzy way of doing the hair. Yet here was a young woman dressed in drab and severely hair pinned.

Before I had time to give decent burial to these preconceived visions Miss Morgan dispelled another illusion. We were standing in the main dining-room, which tones into old ivory, with wide washes of dull gold. At one end is a room in softest shades of gray, like a demure young widow in second mourning. At the opposite end, through the broad portals, I caught a glimpse of the banquet room, all in scarlet and gold, like "honey splashed with port."

"How you must have reveled," I said, "in this chance to squeeze dry the loveliest tubes in the whole world of color."

Miss Morgan smiled and answered: "I don't think you understand just what my work here has been. The decorative part was all done by a New York firm.* In fact, most of it was finished before the fire, and has been restored on the same lines and in the same tones. My work has all been structural."

"Structural!" The word pegged my imagination down to earth again. For in the back of my mind I had been wondering whether architecture is not a fine field for any woman with a sensitive feeling for color and form. But "structural" conjured up a vision of strength of material and all sorts of problems which no amount of sensitive feeling would solve.

Miss Morgan took me into the Laurel Court, which is between the foyer and the main dining-room. "In the rehabilitation of this room," she said, "it was necessary entirely to replace the glass dome, and you have no idea how much important detail is involved in a skylight of such magnitude."

"But I suppose you found the other details of the room more interesting," I hazarded, pointing at the trellis work which criss-crosses the walls, arbor fashion, and the clusters of grape festooning their graceful golden length over the wall panels.

"Baumgarden of New York," quoth Miss Morgan, tersely. "I was not called into the building until after the fire, and on this floor my chief work has been the staircases, skylights, the bar, offices and general rehabilitation. From the first conception of the building the mural decoration has not been in the architect's province."

It is difficult for a mere woman with no more serious problem in life than the construction of a new Easter bonnet to realize what a compliment it is to the sex that a woman architect was chosen to restore the Fairmont. When I had gone over the entire building with Miss Morgan I fully realized that foreman's assertion that her name happened to be Julia Morgan, but it might as well have been John Morgan.

To be sure, she has had the best training that the world affords. Miss Morgan was graduated from the University of California and then spent several years at the Beaux Arts, the great French school of architecture. She had special training for an undertaking like the Fairmont, having studied the construction of one of the finest hotels in the world from the foundations to the last detail of convenience and elegance.

So she was called into the task which the present owners of the Fairmont undertook when they set about the rehabilitation of the hotel with a determination to have it in readiness for the anniversary of the city's baptism by fire. Though the exterior of the huge stone structure resolutely withstood the fierce onslaught of flame, the interior was still in the decorator's hands and with cruel persistency the fire sought out the inflammable material scattered around and flame leaped to meet flame until the beautiful interior was ruined.

In its present state of completion the building does not show nearly as much of Miss Morgan's work as it will when entirely finished. Even the garden that slopes down to Mason street has been laid out by this clever young woman and will be an attractive foreground for the marine view, which is framed in every one of the commanding windows of the building.

After all, women are clannish—for when I was crossing the bay that night and saw, rising far over the waterscape, the Fairmont, fitting the skyline without a wrinkle, I wanted to emblazon above it the part that a Woman has played in its construction. And the fact that the foreman nobly insisted it is Julia Morgan, Architect, will not prevent me from hyphenating it as Julia Morgan, (Woman)-Architect.

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* Schastey & Vollmer, formerly of New York, and now located at 1930 Van Ness Avenue, San Francisco, did much of the decorative work in connection with Baumgarden.

* * *

Carelessness in Concrete Construction

RICHARD L. HUMPHREY, president of the National Association of Cement Users, has examined many of the cases of collapse of concrete construction and pronounces his opinion that in every instance the fall of the structure has been due to carelessness of construction. From observation of other concrete buildings in process of construction, he is satisfied that the same errors are being repeated and that further collapses will surely come unless the officials of the cities take the question in hand. He believes that in order to meet this problem squarely, every city in the United States should revise its building laws in such a manner that either the owner or the contractor of a concrete building shall be compelled to employ a competent inspector whose duty it shall be to follow every detail of the construction from the beginning of the foundations to the completion of the roof. New York, St. Louis, Boston and Philadelphia have either prepared or are now preparing new regulations governing concrete construction.

The science of concrete construction is not yet thoroughly settled, and until it is, the greatest care should be taken in the use of the material. Concrete, by reason of its superior qualities, especially its resistance to fire and its cheapness, is being used extensively in these days, and will be employed still more in the future. It is a comparatively new material, and until its properties are fully known and appreciated, the greatest safeguards should be thrown about it. There is a prevalent idea that it can be used by unskilled laborers. That is the error which has led to serious consequences. While it is true that unskilled labor can be employed to a large extent, concrete construction requires the same care and attention to details that is demanded by first-class construction with other materials.

Each failure tends to discourage the use of concrete, for the reason that it is almost universally attributed to the material rather than to the improper conditions under which it is used. The failure of a reinforced concrete structure by reason of improper design, poor materials or bad workmanship is no more an argument against its use than the collapse of a steel structure under similar conditions is an argument against the use of structural steel in construction.

Interior Decoration

By A. W. REIBER*

DECORATION is the assembling of form, line and color so arranged as to produce perfect harmony.

In this advanced age of enlightenment and progress, when the abilities of the architect, designer and decorator are combined to design and execute the artistic interior, and the art of home-furnishing and decoration is being studied more and more by the individual, the question of decoration is a most important one.

The first question to be decided is that of the style the room or interior is to represent, whether it should be of strictly Period design or of a more modern style.

Perhaps the room is still in the rough state, while woodwork, furniture, hangings and color schemes are yet to be planned in their entirety. The detail of interior finish, furniture, carpets and color schemes must be in perfect harmony in order to produce the proper results.

Then again we may have a room which has already been given a style by the builder or by the architect; that is to say, the interior finish is complete, and it remains for the decorator to suggest and assemble the proper carpets, furniture and hangings, to be in keeping with the detail which is already in place. This is where the ability and taste of the decorator is called for.

In a great many cases these furnishings are designed and manufactured especially for the room, as it is not always that the right articles can be found at hand on the floors of our furniture shops.

There was a time when the gentleman in need of a piece of furniture would call in his favorite cabinet maker and the easy chair or the fireside

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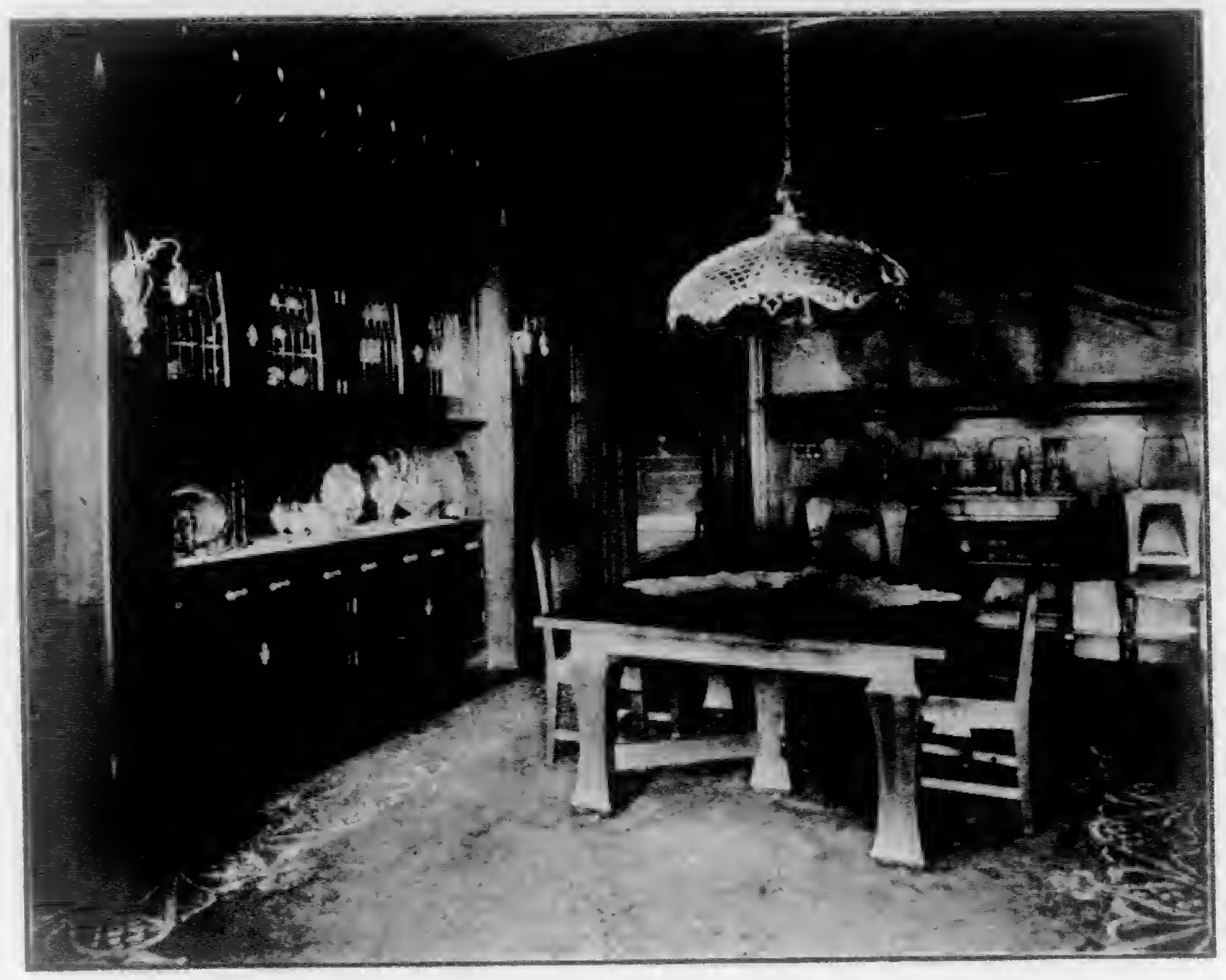
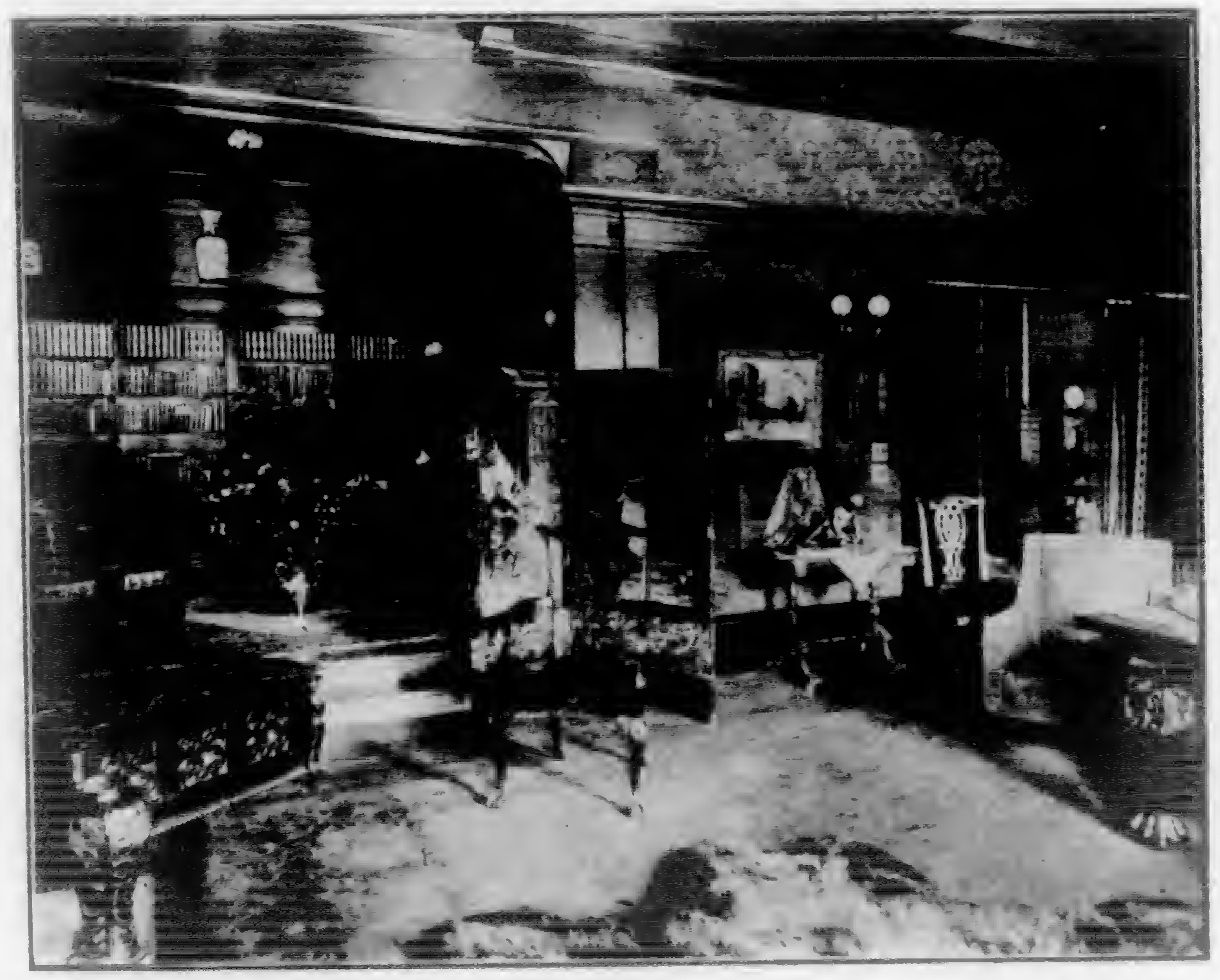
* Mr. Reiber was for five years associated with the John Breuner Company of San Francisco. He is now the senior member of the firm of A. W. Reiber Company, 1607 Broadway, Oakland.



Dining Room in a Pacific Avenue Home, San Francisco
Designed and Furnished Under Direction of A. W. Reiber



Another Room Which Speaks for Mr. Reiber's Skill

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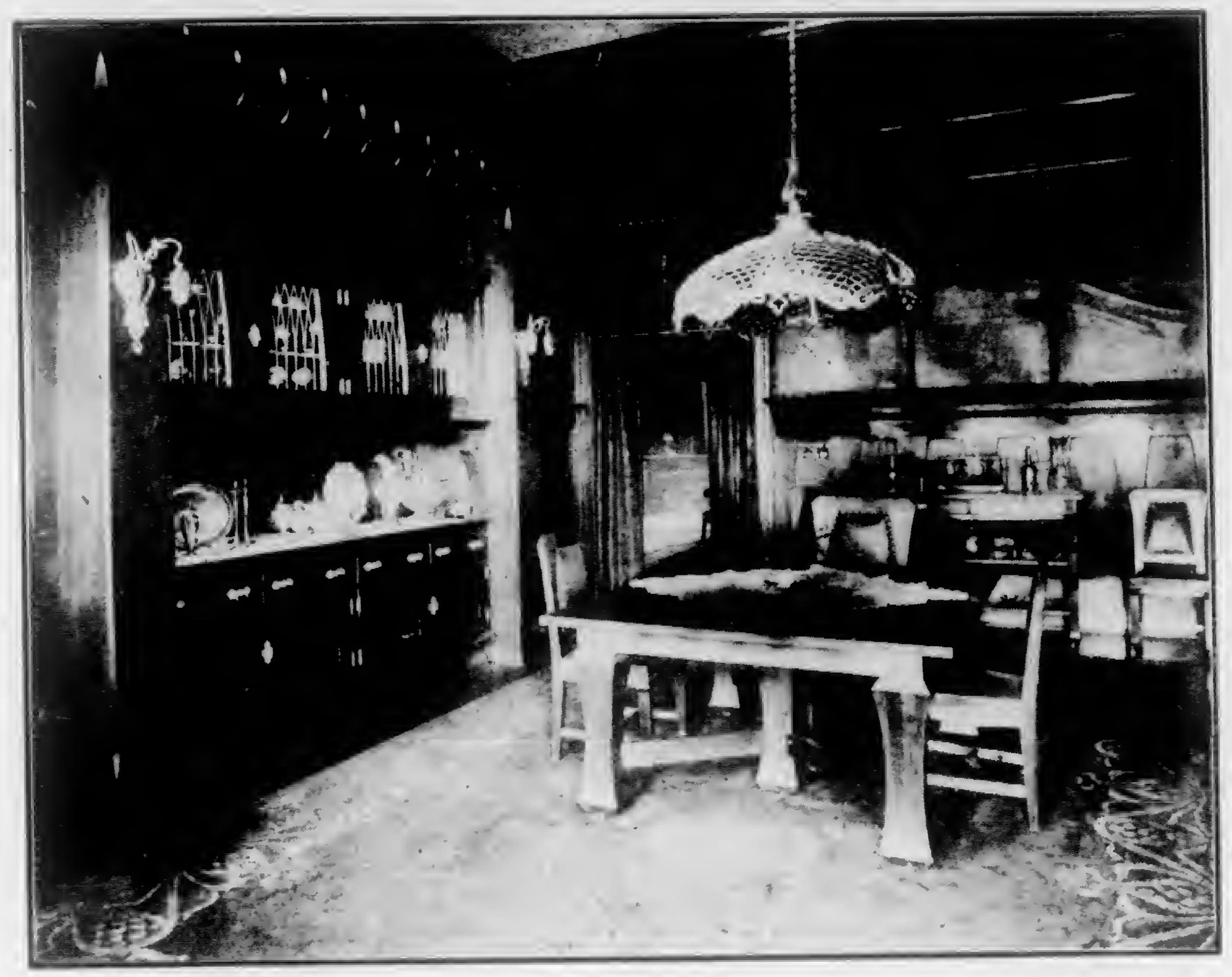

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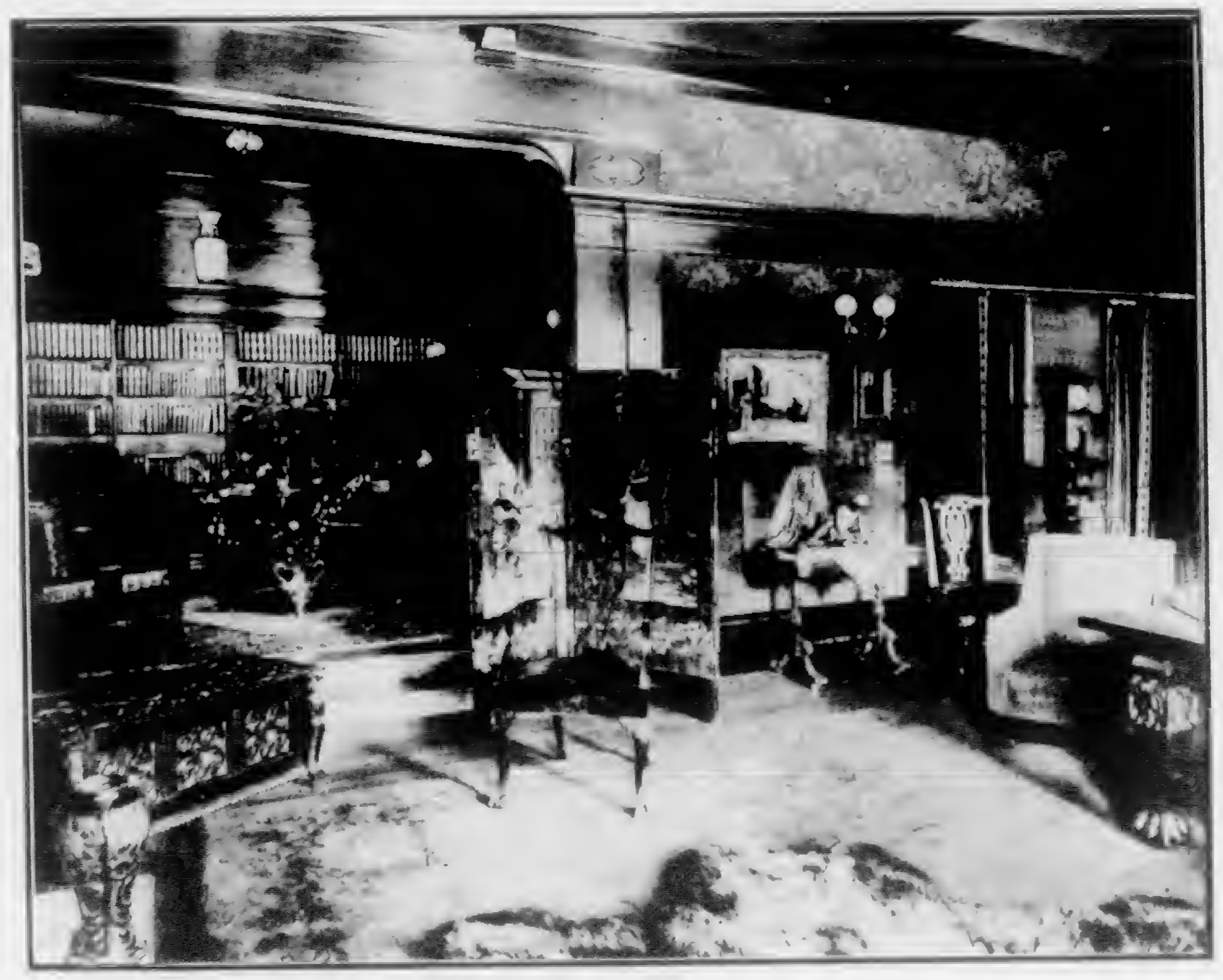

Another Room Which Speaks for Mr. Reiber's Skill chair was designed and built to fit the needs and taste of the individual who was to occupy it.

Later, with the increasing population and the demands of commercialism, came the age of machinery and here and there furniture factories were built.

There are now a number of factories which are bending all their efforts to produce artistic furniture of Period as well as modern styles, and the well-regulated decorative shop that caters to the fine trade is equipped to produce and furnish whatever is necessary to decorate and make the home complete, so there should be no excuse for the interior that is not properly furnished.

The great trouble in determining how far the decorative quality shall prevail in a room is due to the fact that one does not from the outstart determine the use of the room.

The reception-room, the ball-room, the room for assemblies, is one kind of a room and may be considered simply as a frame for your guests; but the room that is a living room, the room that suggests home, and that we enjoy because it is beautiful and because it reflects certain sentiments or associations, is quite another kind of a room, and should be treated in a different spirit.

The room which is expressive must be conspicuous in distinct features. Having a room to furnish, the style and use of the room should first be determined upon. That done, the style should be carefully followed for all its decoration and beauty.

All such articles as are not in strict keeping and harmony with that particular style should be carefully omitted from the interior.

Only when the question of furnishing and decoration is taken up and carried out systematically can good results be expected and acquired.

Let us glance for a moment at the typical room so often found in our modern homes, whether it be reception-room, drawing-room or parlor.

Here we may find the wall covered in paper or fabric of delicate design, while the hangings and draperies were probably placed as an after consideration. Under these hang lace curtains, good in individual style, but entirely out of keeping with either wall or hangings. The portieres are perhaps of velour with heavy metal or leather design, and there is a Turkish rug upon the floor and a conglomeration of mahogany and gold furniture.

To call this assortment good taste would be a misunderstanding of the word.

How often we enter a room which is furnished—we may say lavishly. Plenty of money has been expended on the furnishings, yet the different parts of the setting are entirely out of harmony with each other.

Here and there a piece of furniture or other article stands out and jars against its neighbors, others seem to approach one as though asking to be released from their surroundings. To feel at ease in such a room is asking the impossible.

The quality and price of a fabric or an article of furniture is not of as much importance as style and harmony. The placing of an expensive paper or fabric upon the wall of a room does not make that room a style.

Not until we have the ceiling, the wood-work, the wall, the carpet or rug, the hangings, the furniture and the fittings all in harmony can the interior be called stylish.

The up-to-date Decorative Shop should be conducted by men who will suggest and assist in the selection of the proper articles, and their services may be had by the prospective buyer for the asking.

Let us hope the time may come when mistakes like those noted may less often offend against good taste.

Among the Architects

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(ORGANIZED 1857)

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*Executive Committee.

Next Convention at Chicago, Illinois

San Francisco Chapter of American Institute of Architects

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Southern California Chapter.

Officers for 1906-1907.

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Steel for Palace Hotel

All the contracts for structural steel for the new Palace Hotel at San Francisco, have been let and arrangements made with the Southern Pacific and its connections to bring the material from the Pennsylvania manufacturing plants to the Coast with all possible speed. Some of the steel has already arrived, and it is the intention to rush work on the big caravansary from this time on. The structural steel orders amount to 7000 tons and the railroad people have arranged to load twenty-five tons to the car on the average. On this account it will require 280 cars to bring the material West—fourteen trains of twenty cars each. It will cost the Palace Hotel people $105,000 in freight charges to bring the steel to the coast.

Architect Barth Busy

Architect Herman Barth of 641 Mission street, San Francisco, is preparing plans for the following; a family hotel for William Hoag on the northwest corner of Sutter and Leavenworth streets, which will be seven stories high; a store and office building for Mr. Howard of Burlingame; plans for the reconstruction of the building on the southwest corner of Market and Spear streets, owned by Mrs. W. W. Youngs of the Hotel Jefferson.

Plans for Free Market

The State Board of Harbor Commissioners have considered the plans for a free market submitted by the engineer and instructed him to make some modifications and submit them at the next meeting of the Board, together with complete specifications. As the general scheme has been agreed upon, it is probable that the plans will be adopted and the secretary ordered to advertise for bids.

The plans provide for building two rows of stalls on seawall lot 3, the structure to face on East street, San Francisco. There will be thirty-five stalls, each fifteen feet square. The row facing on East street will contain eighteen and the second row seventeen, with a fifteen foot passage between them. There will be entrances at each end and two entrances on East street. Both stalls and passages will be under one roof. The floors and passages will be paved with concrete and a sidewalk will be run through the lot at the inner edge of the inner row of stalls. The space inside of this will be paved for teams.

In New Offices

William H. Weeks, architect, has moved from the Merrimac building, near the Ferry depot, where he located soon after the fire, to handsome offices in the Grant building, at Seventh and Market Streets, San Francisco.

Bakewell & Brown, architects for Berkeley's new city hall, are now located in comfortable quarters at 417 Montgomery Street, San Francisco.

Concrete Bridge Across Sacramento River

The efforts that have been made by the people of the northern portions of Glenn and Butte counties for the past several years, for a joint bridge across the Sacramento River, have at last met with success.

The establishing of the sugar factory at Hamilton, Glenn County, which will demand the products of a large section of the country on the Butte County side of the river, together with the necessity of easy access to the market for the other large volume of products of this rich section in both counties, have convinced the county officials of the advisability of constructing a permanent highway bridge in this vicinity.

By the unanimous vote of the Boards of Supervisors of the two counties, John B. Leonard of San Francisco has been employed as engineer to design and superintend the construction of this bridge. Mr. Leonard's instructions are to prepare plans on lines that will insure one of the most stable and permanent structures crossing this only navigable stream in the Sacramento Valley.

Hold Love Feast

The Masons and Builders' Association of San Francisco gave a love feast the night of October 5, in a down town cafe to their partners in construction, the Master Bricklayers. Covers were laid for eighty persons and the evening was one of good fellowship. The purpose of the banquet was to further the mutual relations between the two trades that are assisting in the rehabilitation of San Francisco.

The toastmaster of the banquet was J. J. Phillips. The guests of honor were Willis Polk, Henry George, George Postlethwaite, Harry Gray and other prominent contractors and architects.

Music was furnished by the Knickerbocker Quartet and a string orchestra.

A unique feature of the banquet was the menu cards which graced each seat. On the corner of the card was an engraving of a building in course of construction and a sketch of tools used by bricklayers. Strings of red, white and blue ribbon laced the paper together.

The officers of the association are: W. Reed, president; J. M. White, first vice-president; J. Riley, second vice-president; Joseph J. Phillips, secretary; Nels Larsen, treasurer.

Alameda Elks to Build

Two plans are now under consideration by the Alameda Lodge of Elks for a club house. One of the propositions is to build a home for the lodge in the business section of the city, part of the building to be given over to stores and offices. The second plan is to construct a club house on the bungalow style to be erected on the south shore near the beach. The cost of such a club house is estimated at $6500. Plans have been submitted by Architects M. V. Politeo and Charles Rogers, members of the local Elks lodge. Building operations will begin as soon as the type of building is settled upon.

To Build New Cliff House

The plans of Reid Bros., architects, for a new Cliff House have been accepted and all contracts let. The new building, erected on the old site, will be two stories high and constructed of reinforced concrete.

John Tait has secured a ten years' lease of the new Cliff House from the Sutro estate and intends carrying out his plans made previous to the destroying of the old building.

Delegates to Convention

Alfred F. Rosenheim, Ferdinand Parmentier, Myron Hunt and Octavius Morgan have been selected by the Southern California Chapter, A. I. A., to represent that body at the national convention of the American Institute which is to be held in Chicago, November 18th and 19th.

Concrete Tower

The contract for the construction of an immense controlling tower to be erected in the Little Bear valley for the Arrowhead Reservoir and Power Co. has been let to Arthur S. Bent of Los Angeles. The tower, which will be 184 feet high from the tunnel floor grade, will be erected at the front of the prestent portal of outlet tunnel No. 1. It will be 13 feet in diameter at the top and will be built of reinforced concrete.

Cement Plant for Los Angeles

Los Angeles capital is being interested to a considerable extent in a proposition to erect a large cement manufacturing plant at Tehachapi, about 120 miles south of Los Angeles. The corporation is to be known as the Golden State Portland Cement Company, and it will have a capitalization of $2,000,000, divided into $1,000,000 of preferred stock and the same amount of common stock.

The plant which it proposes to erect will have a capacity of 2,000 barrels of cement a day.

With each succeeding year the part which cement is playing in various kinds of structural work is becoming more and more important, and the industry therefore is one of special interest to building contractors. No less an authority than Thomas A. Edison has predicted that the time is not far distant when wood will give way to cement for nearly all building purposes. The timber resources of the country are rapidly becoming depleted, owing to the fact that the present consumption is about four times gerater than nature's displacement.

The Golden State Company owns two large limestone deposits, one at Tehachapi and the other at Oro Grande, and also has acquired a clay deposit at Cajon.

Francis O. Wyman, a lime manufacturer of many years' experience, is the president of the company, and Werner P. Eckdahl, who was connected with the Illinois Steel Company for seventeen years, is the general manager. George W. Parsons of Los Angeles is treasurer and a member of the board of directors.

Brick for Mills Building

C. H. Frost, of the Los Angeles Pressed Brick Company, has received an order for the ornamental brick required for the reconstruction of the Mills building in San Francisco. He reports orders on hand for more than $600,000 worth of clay products for the coming six months, some of these orders being from Oregon, Utah and New Mexico. He also has an inquiry from Central America.

Want Pay for Plans

A claim for $875 has been filed with the San Francisco supervisors by architects Dodge & Allen, who prepared the plans for the new judicial building ordered to be built at Bush and Stockton streets by the last board of supervisors at a cost of $35,000. The project fell through and the building will not be erected as other arrangements have been made to accomodate the superior courts.

Reinforced Concrete School House

Architect Harrison Albright of Los Angeles has had his plans accepted for a reinforced, concrete school house to be erected by the city of San Diego at an outlay of $100,000. This will be one of the first reinforced concrete school houses to be erected on the Coast. A large assembly hall will be a feature of the building. There will be twenty rooms in addition to the assembly hall. Mr. Albright's plans were accepted in competition with a dozen other Los Angeles and San Diego architects.

Returns From East

M. A. Murphy, manager of the Carnegie Brick and Pottery Company, has returned from a trip in the East. The company's new terra cotta manufacturing plant at Tesla, Cal., has been completed, considerably increasing the capacity of the extensive works, where fire brick, pottery and sewer pipe are manufactured. There is a very large demand for the highest class of ornamental terra cotta for the best buildings under construction in San Francisco and Los Angeles. Many of the designs recently executed are very elaborate. Among the contracts for architectural terra cotta that are being filled by the Carnegie Brick and Pottery Company are included some of the largest buildings in San Francisco.

Pioneer Skyscraper Builder

William Hamilton Russell, the New York architect who died while traveling in Europe, was one of the earliest to turn attention to the skyscraper idea for large office buildings, and many of the most notable ones in New York were built by his firm.

Reinforced Concrete Test

The initial test of a part of the ground floor of the Trustee building on the east side of Broadway between Fourth and Fifth streets, Los Angeles, was made recently and the result was highly satisfactory.

The building is ten stories in height and of reinforced concrete construction. In testing the flooring, 9600 pounds of cement, in sacks was placed on fourteen square feet of surface, which was equivalent to nearly 680 pounds to the square foot. The deflection in the flooring was not noticeable yesterday, although the weight was double that required in the average test.

The test was made under the supervision of the city inspectors and according to their estimate ranks among the best ever made in the southern city.

To Have City Architect After All

The San Francisco Supervisors have finally passed an ordinance creating the office of City Architect, placing its control entirely in the hands of the Board of Works, and directing that all municipal construction of buildings as well as their repair should be carried out under its supervision.

The operation of this law will put an end to the present anomalous condition by which architects illegally appointed by the Gallagher Board have been planning the school and other bond issue buildings.

The candidates for the position of City Architect are Newton J. Tharp and W. J. Cuthbertson, the latter having been City Architect prior to the Schmitz administration.

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THE COMING MUNICIPAL ELECTION.

Never before in the history of San Francisco has so much depended upon the outcome of a municipal election as this year. The future prosperity of a great city hangs in the balance and it remains for the voter to decide which way the scales shall fall. The Architect and Engineer has no political ax to grind. It cares not a tinker's damn who is elected Mayor so long as the man is honest, independent and a servant of no one except the people. We want to see San Francisco rid of grafters and we can not help believing that the majority of the people of San Francisco acquiesce in these sentiments and would like the moral and material cleaning up of their city to go on. This can only be possible by electing Mayor Taylor and re-electing District Attorney Langdon.

To elect another Union Labor crowd would be to court a repetition of the disastrous conditions existing under the Schmitz administration. To elect a body of politicians headed by one Ryan and a friend of the disgraced former Mayor, Eugene Schmitz, would be almost as serious a mistake as to elect the union laborite McCarthy.

San Francisco does not want either of these men nor any of their hirelings. Victory for the Taylor ticket will insure confidence and without that confidence no outside capitalist would be so insane as to trust his money to our handling. Everybody knows San Francisco can not go on in its splendid march towards rehabilitation and reconstruction without foreign capital. The work thus far accomplished has consumed every available dollar, so far as local finances are concerned, and what is done from now on must necessarily be with the aid of our Eastern money lenders. The issue would seem to be plain to the voter, and if he cares aught for the future of his city he will vote the Taylor ticket on election day.

WANTED: A GOOD INDEX PLAN FOR FILES

A short time before the earthquake and fire some interested architect or contractor, we cannot recall which, nor can we remember his name, wrote us an outline for an index to the various volumes of the Architect and Engineer. It is hardly necessary to add that the letter containing the suggestions was destroyed, along with nearly everything else, in the great fire. The ideas offered by our now unknown correspondent were so good that we had planned to adopt them. If he will be good enough to disclose his identity and again outline his plans to us we will be extremely grateful, or if any of our readers have any suggestions to offer in the way of a handy index for use in binding back numbers of the book, we would be glad to hear from them.

ARE SKYSCRAPERS DANGEROUS?

Commenting upon a recent alarming prophecy by George W. Babb, president of the New York Board of Fire Underwriters, that it was only a matter of time when the skyscraper district of New York would be destroyed by fire, Architect Fitzpatrick, the executive officer of the International Building Inspectors' Society, and probably the highest authority on fireproof construction in the country, says that while such a thing is not beyond the realm of possibility it is highly improbable under present conditions and could, at slight expense, be made an utter impossibility.

The skyscraper district of New York cannot be compared to anything there was at Baltimore or in San Francisco. In both conflagrations the tall buildings suffered by reason of the vast amount of poor building there was all about them. Fire found but comparatively little to burn within them and in a great many cases though damaged themselves they served as a bulwark, a protection to adjacent and more combustible buildings. In Baltimore, as a matter of fact, as soon as the fire reached the skyscraping district, small as it was, it burnt itself out in them and they actually saved the city beyond them, stopping the fire much as a dyke does the inrush of flood tide.

In New York, as in many of the new skyscrapers in San Francisco, the tall steel frames are protected and enclosed with imperishable brick and hollow tile fireproofing, which give a fire in the contents of the buildings nothing of a structural nature to feed upon and destroy.

Mr. Fitzpatrick thinks the skyscraper district of New York is about the safest place from fire in the entire country, and if the owners of the buildings would but go to work and put wired glass in metal sash in the windows where they have not already done so, thus making it absolutely impossible for fire to find ingress into the tall buildings from without, that district would be so safe that little or no insurance would need be carried upon the buildings about which Mr. Babb is so much perturbed.

Some New Books

The Bates and Guild Company, Boston, Mass., have just published a book containing 24 plates of detail drawings in mill construction prepared by Hawley W. Morton, architect. The plates are of especial value to architects and contractors who go into heavy mill work. There is a handy index to the plates and a descriptive preface by the author.

"Engineers Handbook of Concrete Reinforcement" made by the American Steel and Wire Company is the name of a handy little document just issued by the American Steel and Wire Company. It is an invaluable addition to the library of every concrete engineer or architect, for that matter. The book contains some excellent material on reinforced concrete, how good it is, its economic use and properties, bonding old and new concrete, tables etc., Price $2.00.

Percy L. Marks, architect, author of "The Principles of Planning," etc., has written "The Principles of Architectural Design" which has just appeared in a 300 page book, neatly bound and containing 165 full page illustrations. The work is most complete and the various problems are taken up in a most masterful manner. The book is published in London and the American representative is Wm. T. Comstock, 23 Warren Street, New York. Price $4.50.

The Publisher's Corner

Warranted Expansion

The rapidly increasing business of the Otis Elevator Company has necessitated a large increase in their facilities for handling the Los Angeles business. Firmly believing that Los Angeles is to have a very rapid and solid growth in the future, the Otis Elevator Company is preparing to meet an extensive growth in its business. The company has felt for some time past that its equipment for handling its business in Southern California has not been fully up to the Otis standard. The company has recently secured a long term lease of the premises at No. 218-220 East Fourth street, where it will make extensive alterations to the present building and erect a substantial addition to cover the entire lot. A complete shop equipment will be installed and a large force of skilled mechanics will be employed.

Opens Coast Office

The Trussed Concrete Steel Company has opened a branch office in San Francisco, under the management of Felix Kahn, and will advance the sale of Trussed Bar, Kahn Ribbed Metal and Cup Bars.

The company carries a local stock of Kahn Ribbed Metal and Cup Bars enough to take care of the immediate wants of any contractor. "We also carry", writes Mr. Kahn, "Cup Bars in stock from ⅜ inch to 1¼ inch in diameter, varying by eighths, and length up to 46 feet. In connection with the selling of our steel, we will do engineering work, and make preliminary estimates on any reinforced concrete work for prospective purchasers.

"Our engineering work will be under the charge of W. L. Kelly, C. E., who has been designing reinforced concrete in this city since the fire."

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Opens Seattle Office

The Van Emon Elevator Company has opened a branch office in the American Bank building, Seattle. The company also has an office in Portland and is going to make a strong bid for the elevator business in the Northwest.

Howe Scale Company Moves

The Howe Scale Company of San Francisco announces its removal from 1690 Market street, where it has been since the fire, to more commodious and centrally located quarters at 143 and 149 Front street, which thoroughfare is again becoming popular as a commercial and wholesale center. In addition to a complete line of scales the company is agent for the Howe safes, Fisk's fancy iron stable stalls and stable fixtures, as well as a full line of Fisk's copper weather vanes.

High Ideals in Paints

From the Real Estate and Builders' Journal

Owners, architects and builders are vitally interested in pure paints for both exterior and interior use. No item of expense in building or maintaining a house is of greater importance, because painting is an expense that continually recurs in the proper maintenance of a frame building. Good paint properly applied will last for years, while poor paint soon wears off. The problem of selecting the best paint, therefore, is of great importance from the standpoint of economical management of property.

The Real Estate and Building Journal has recently made an original investigation of the numerous prepared paints now on the market, with a view of selecting a paint that can be fully recommended as absolutely reliable and of uniform excellence at all times and for all purposes. Our investigations have led us to the conclusion that the "Monarch Paint," manufactured by the Senour Manufacturing Company, of Chicago, stands at the top in the character of its ingredients, the method of the manufacture and its general utility and value. For twenty-two years past the Senour paints have been the standard of excellence in the mixed paint business, and that standard has never been lowered. The Senour Manufacturing Company was the pioneer in pure paints and its reputation as such remains undimmed to this day. Its immense business has been built up solely through the reputation of its goods as the best article of mixed paints that can be produced.

The secret of mixed paint manufacture is not difficult to understand. It is generally known that the principal ingredients of all good paint are linseed oil, white lead and oxide of zinc, to which a small amount of driers may be added if desired. The secret of manufacture lies in the proper proportioning of these ingredients and the careful grinding and mixing of the paint. That is where "Monarch Paint" excels. It contains no adulterants or make-weights, is strictly 100 per cent pure, and is scientifically mixed and compounded. In other words, it is an honest paint, and that is the secret of the success of the Senour Manufacturing Company extending over nearly a quarter of a century.

The Senour Company's paints are handled in San Francisco by the Klatt-Hirsch Company of 113 Front street.

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San Francisco Concern Installs Largest Cleaning System in World

Marshall Field & Co. are the acknowledged leaders in the commercial world, particularly as to the equipment of their stores in fixtures, lighting and other features. Any equipment, before being purchased by them, is subjected to a rigid expert comparison with other manufactures of similar lines, and its adoption is an acknowledgment of its superiority.

Perhaps the most interesting feature in their new stores is the sanitary system of cleaning, which is of ample capacity to take care of some 100,000 yards of carpeted surface daily. This amount of yardage in carpet of itself represents a cost of a quarter million of dollars. Besides improving the appearance of the stores, it avoids the noise that would exist on floors devoid of covering, and with this sanitary system of cleaning, makes it possible to keep this vast amount of surface in a dustless condition. This equipment, supplied by the Sanitary Devices Manufacturing Company of San Francisco, has also attracted much attention among other large Eastern stores, and several have been equipped with outfits suitable for their requirements.

To handle the vast amount of dirt that it removes nightly, and to make it possible to clean the store with short lengths of hose, there are four main lines of horizontal piping; one for each building, from which fifteen risers extend up through the floors, with some 200 valves to which the hose and sweepers may be attached.

The machinery in the basement consists of three units; each of forty horsepower, and have a total displacement of 3540 cubic feet of free air per minute. There are automatic controlling features on these pumps which regulate the amount of horse-power required to the actual number of sweepers in operation.

The dust separators, or tanks in which the dust is collected, are an important feature, for without any screens or baffle plates to interfere with the free passage of air to the vacuum pumps, all dirt, including the finer dust, is completely eliminated by an atomizing attachment.

Besides the tools for cleaning carpets, there are also special tools for dusting walls, shelving, sprinkler pipes, and in fact removing loose dust wherever it exists.

It is estimated that the saving in merchandise alone will soon pay for the equipment.

Among other advantages is the fact that the working done in a dustless manner, can, to a large extent, be performed in the day time.

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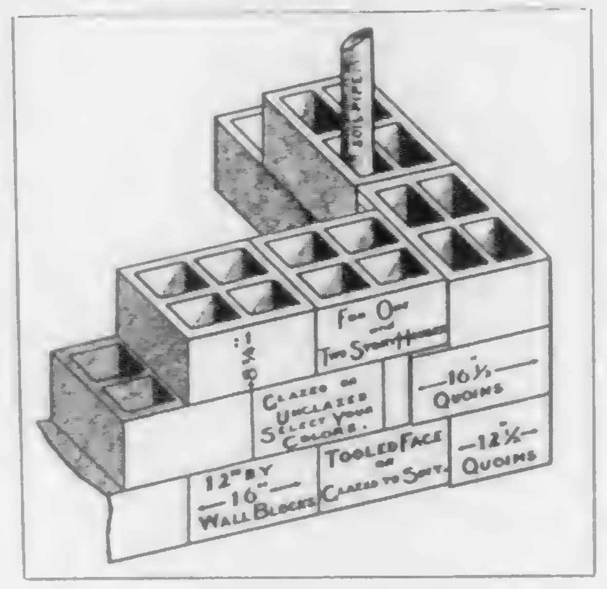
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Tile and Slate Roofing

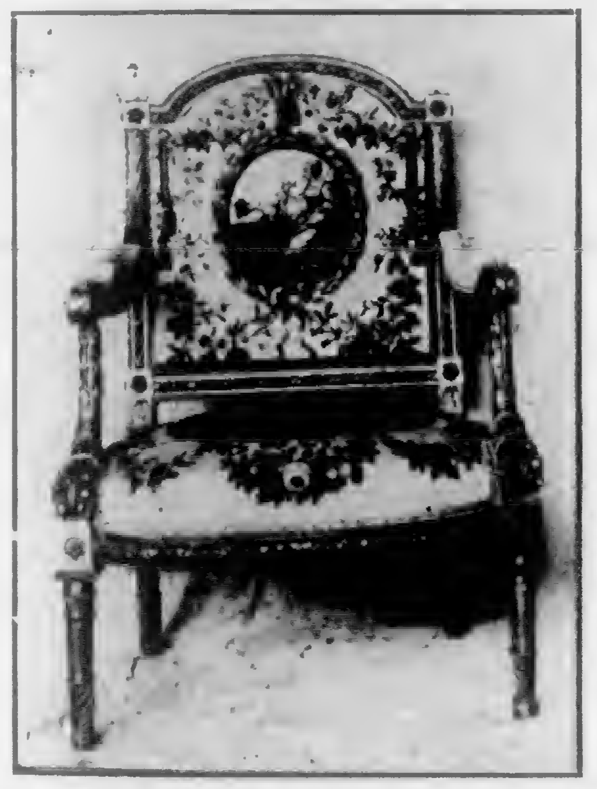
Mark Kirkby reports having taken a number of excellent roofing contracts in Southern California. Mr. Kirkby is a leading roofer in both slate and tile in Los Angeles and some of the finest buildings in the southern city were roofed by him. He is Southern California agent for Akron, Ohio, roofing tile and Eureka black slate. Recent contracts taken by Mr. Kirkby are the Inglewood Crematory, garage for Mrs. Robert J. Burdett, residence for A. C. Bilicke, the well known hotel man, Bixby hotel, Long Beach, St. Agnes Church, Los Angeles, Home for the Aged at Boyle Heights, and other equally important structures.

Machinery and Electrical Company

The Machinery & Electrical Company of Los Angeles is coming to the front very rapidly as leading heating and ventilating engineers and contractors. Many of the largest public buildings and school houses in the state have been or are now being equipped with the Sturtevant blast system handled by this company. Some of the recent contracts taken are the following: heating the Methodist Episcopal Church, Long Beach, Marsh & Russell, architects; Presbyterian Church, Pomona, Ferdinand Davis, architect; San Dimas Grammar School, Ferdinand Davis, architect; Claremont High School, F. S. Allen, architect; San Jose Presbyterian Church, Marsh & Russell, architects; Sherman Heights School, National City High School, and San Diego High School, F. S. Allen, architect. Forty-five thermostats are to be installed in the latter. A contract has also been taken for heating the new Los Angeles Masonic temple, Hudson & Munsell, architects.

Paving Many Streets

The Worswick Street Paving Company of Fresno has taken the contract for paving about 200,000 feet of public streets in Merced. Asphaltum will be put down and it is expected that when the present contract has been filled several additional streets will be paved. Fourteen blocks of streets have just been paved by the Worswick Company in Modesto and that hustling town is now enjoying the cleanest and smoothest thoroughfares it has been its privilege to boast of for many years.



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1200 Tons of Steel

Woods & Huddart, who have had a large sale of their steel bars for concrete reinforcement, will supply the cast bases and steel superstructure for the John A. Roebling & Sons warehouse to be erected at the corner of Folsom and Hawthorn streets. There will be about 1200 tons of steel in the building. Sutton & Weeks are the architects.

Fine Steel Job

The fine piece of steel work being erected for the Chronicle building is attracting much attention and causing favorable comments from persons watching its construction. The steel was rolled by P. Noble of San Francisco and is one of the largest jobs of the year. The frame has been made heavy enough to stand future earthquake stresses and much care is being taken in the riveting and anchoring of the great columns and girders. The D. H. Burnham Company are the architects and C. A. Blume is the erecting contractor.

Union Lime Co. of Los Angeles Busy

Among the contracts lately taken by the Union Lime Company of Los Angeles, was one for furnishing the plaster, lath and ferring for the suspended ceilings in the Trustee building, Los Angeles and all the cement for the reinforced concrete floors in the Wright & Callendar building, Hill and Fourth streets, Los Angeles. The Union Company has the Southern California agency for the K. C. brand (Kansas City) of Portland cement which is used in preference to foreign or local cement by nearly all the Southern California Contractors. The company also carries a complete line of Duplex hangers and Sackett plaster boards.

Steger's Electrical Works, Fresno

The Steger Electrical Works of Fresno report an exceptionally good business during the usually dull summer months and Mr. Steger says the outlook for an active fall and winter is most encouraging. Mr Steger has just finished wiring the Hector Burness residence at Anita Vineyard which house, when finished, will cost close to $12,000. The new Fresno post office building has also been thoroughly wired by the Steger Works as have the three new buildings of Adolph Bracker which have been equipped with handsome lighting fixtures. It is expected that the new post office will be ready for occupancy the first of the new year.

NOTICE: Civil Engineering Course in the International Correspondence Schools, including text-books can be had at a very low figure. Legal transfer and lessons direct from the schools. Address E. O. K 621 Monadnock Bldg., San Francisco.

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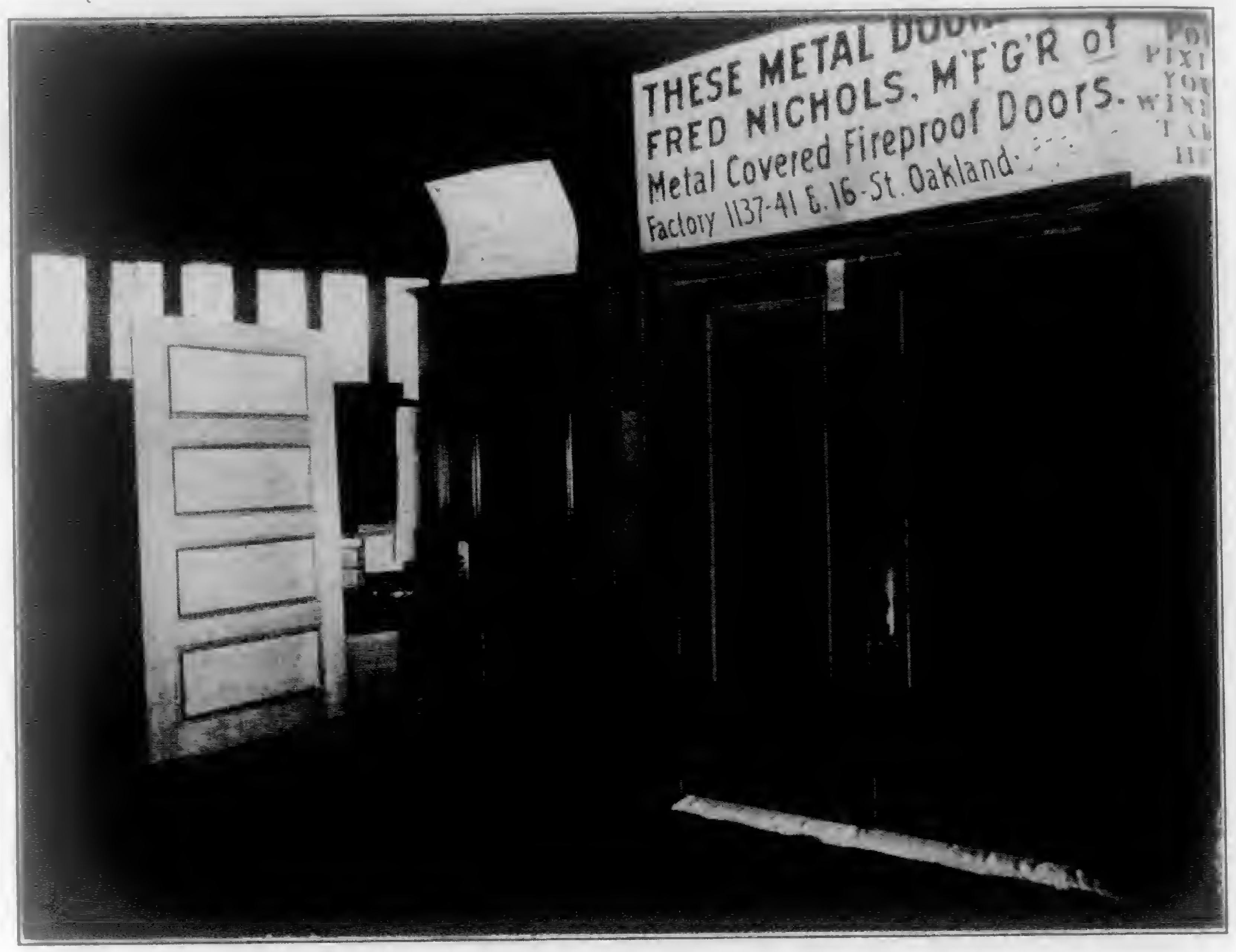
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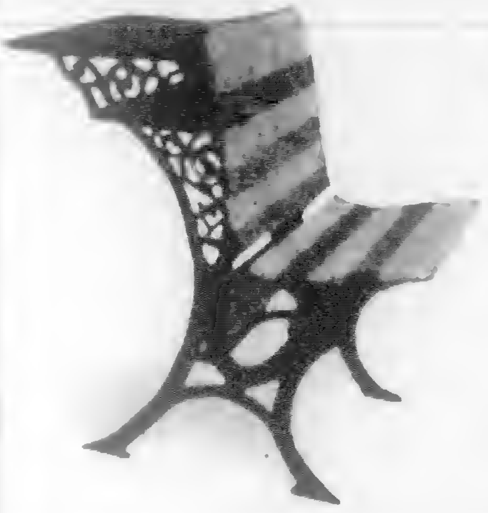

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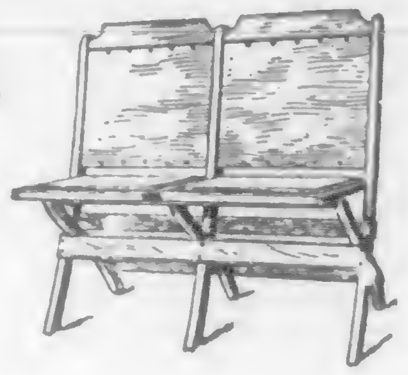

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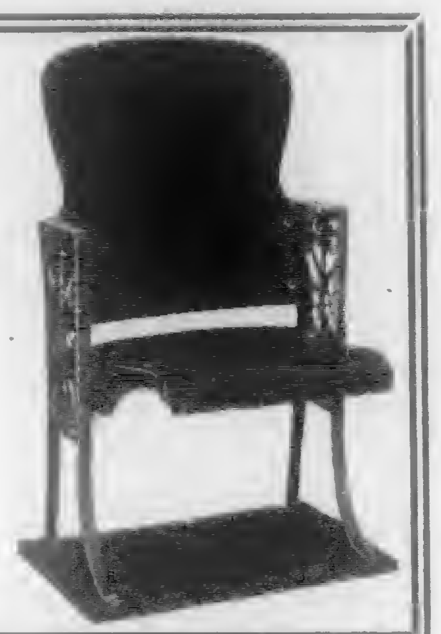

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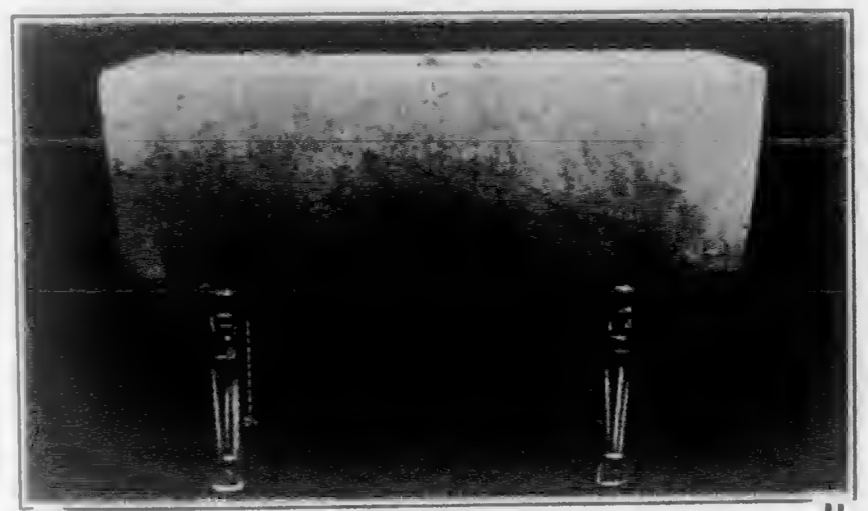

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The Shaw Construction Company

The shaw Company, building contractors, formerly located at No. 11 Union Place, San Francisco, are now occupying more central quarters at 406 Kearny street. Messrs. McIntyre & Satterlee, who were formerly associated with Mr. Shaw have branched out for themselves, taking offices in the Crocker building. Mr. Shaw's son is now a member of the company which announces that it is in a position to give a flat price on any kind of building construction and guarantee a speedy completion of the job. The company will figure on brick, concrete or frame work. Some of the more important buildings put up by the Shaw Company the past year include the Mutual Biscuit Company, the Devoto building at Pacific and Dupont streets from plans by A. W. Smith of Oakland and flats for Benjamin Massone on Green street, San Francisco.

Engine Houses for San Jose

The plans of Wolfe & McKenzie, architects of San Jose, have been approved by the San Jose Fire Commissioners, for a central fire station to replace the building damaged by the earthquake on North Market street. The building will be up-to-date and will have a cement floor, concrete walls, and will cost $27,000.

Architect William Binder, of the same city, has had his plans accepted for a second fire station to be erected on Third street, San Jose, at a cost of $16,000. Bids for the construction of these two buildings will be taken at once. Plans submitted for two other fire stations were rejected and new designs have been called for.

The city of San Jose will also purchase two new fire engines and an aerial truck and will spend $60,000 in remodeling the damaged City Hall.

Won Recognition at State Fair

Fred Nichols of East Oakland, who manufactures metal doors, window trim, etc., made a clean sweep of medals, blue ribbons and diplomas at the recent State Fair in Sacramento. Mr. Nichols had an exceptionally creditable exhibit and he is pleased that his efforts were appreciated by the fair management. His mahogany finished metal doors were awarded a gold medal, while he received a cash prize of $50 and a blue ribbon and diploma for displaying the finest piece of work for the exterior of a building. The display consisted of two very handsomely finished copper store doors.

Four-Story Building

A four-story building of substantial construction is to be built by Claus Spreckels at the corner of Market and Fremont streets and will be occupied principally by the Henshaw, Bulkley Company. The building will probably be of brick and concrete with a steel frame. Howard & Galloway, with offices in the Atlas building, San Francisco, are the architects and work on the structure will be rushed.

Alameda Improvements

The city of Alameda has voted to borrow $305,000 for municipal improvements. A $50,000 lighting plant, a new fire house and other buildings are to be erected as soon as plans can be perfected.

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The Alaska Pacific Marble Company

Alaska, the land of never ending wonders, is again the source of an important business announcement. A few months ago the fortieth anniversary of the hoisting of the American flag on Alaskan shores was celebrated. Forty years ago—yes, and long since then—the public school geographies all over the United States pictured Alaska as a mere collection of icebergs and polar bears. It was popularly supposed to be valueless except for a few furs and arctic whales; an ice-bound region of perpetual winter. Wm. H. Seward was severely censured for squandering millions of good American money for a barren waste that Russia unloaded on us. With the advent of enterprising Yankees, however, the latent natural resources of Alaska soon began to be uncovered and developed. Her fisheries and furs soon yielded more to Uncle Sam each year than the entire cost of the country. For more than a quarter of a century now she has had in operation the largest quartz mine in the world. Ten years ago the discovery of her amazing deposits of placer gold set the world on fire with excitement, and today the matter of her production of fifteen or twenty million dollars a year in native gold passes almost without comment. Her mountains of rich copper ore, her deposits of coal, iron, oil and other elements of wealth, promising to outrival both Michigan and Pennsylvania, are attracting the investments of Morgan, the Guggenheims and other money kings. More than that, Alaska is becoming the theater of the greatest railroad building activity on earth. Immensely strong railroad corporations are vieing with each other in laying bands of steel into the mighty Yukon valley. One such recently constructed an electric light plant along its right of way so that it could run construction crews both night and day—something never before known on earth in railroad building. Modern towns have sprung up along the coast of Southeastern Alaska, and it is found that the warm Japan ocean current so modifies the climate there that it is not materially different from that of Puget Sound. No wonder San Francisco is becoming aroused to the necessity of making an effort to secure her just share of Alaska's rich and growing trade.

Now comes the Alaska Pacific Marble Company with an announcement that it has a few thousand acres of the finest marble in the world, situated on a few islands just off Alaska's southern coast. Marble is one of the highest priced building materials on the Pacific Coast—high priced mostly because only a very small percentage of the supply has ever been produced at home. We bring it in from Italy, from Vermont, Tennessee and other distant sources of supply, under costly freight conditions that make it necessary for dealers to put high prices upon it to cover the cost of production, aside from their margin of profit. Notwithstanding the obstacles and high prices, builders have used vast amounts of marble in finishing and adorning their best buildings. The modern tendency is to use only the very best material, and no other material has ever been discovered that could take the place of marble. The fact that mountains of the finest marble now seem to be available, situated right on tide water on the Pacific Coast, near enough and under such transportation conditions that the product will have the benefit of low freight rates, suggests points of general advantage to the public. Cheaper marble will mean decreased cost in the construction of first-class business buildings. It will mean a more general use of marble than heretofore. The location of an adequate supply on the Pacific Coast will mean the keeping of more money at home than heretofore, instead of sending it away to Italy or to the Atlantic states.

Samples of eight or ten varieties of this new marble, in blocks and specimens, have been brought to San Francisco, and have convinced local marble dealers that its quality and colors are desirable. In fact, the properties have been visited and expected and favorably reported upon by well known local experts of good standing. We are also informed that within a short time the company will commence shipping its marble to this market in large quantities. The local demand for marble in rebuilding San Francisco gives the matter more than ordinary interest.

Samples of the marble may be seen at 886 McAllister street, San Francisco. Those desiring references as to the company's standing, the quality of its marble, etc., should write any or all of the following: Hon. F. C. Harper, Port Townsend, Washington; Peter Taube, Seattle, Washington; Geo. E. Huggins, Rainier, Washington; M. Whittier, Riverton, Washington; Hon. W. H. Kneeland, Shelton, Washington; Dr. Charles E. Parent, Sausalito, Cal.; John Cilker, Los Gatos, Cal.; D. E. Miles, Dunsmuir, Cal.; F. W. Tinkham, Tumwater, Washington; Daniel Finch, Tumwater, Washington; James A. Moore, Seattle, Washington; Hon. Geo. M. Stewart, Seattle, Washington.

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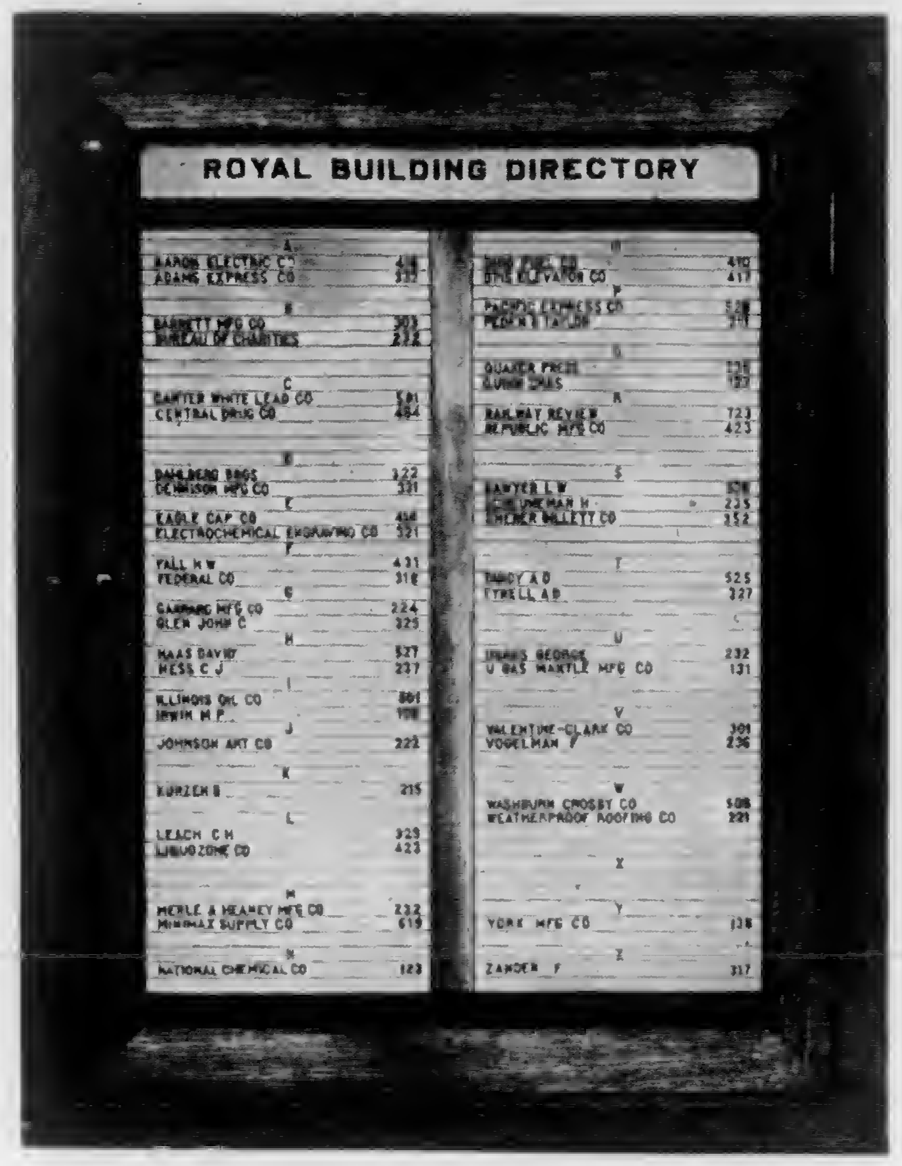

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Is Helping to Rebuild San Francisco

The illustrations show two of the plants of the Building Investment Company—its city mill and moulding depot. The Building Investment Company is interested in other building industries which give it a prominent place in the up-building of San Francisco.

The Building Investment Company is a local corporation with a capitalization of $75,000. The president is Mr. R. Cadwallader, the secretary is Mr. Frank McArthur and the vice-president and general manager is Mr. P. H. Bosworth, who has been identified with building in San Francisco for a number of years.

The Building Investment Company is confining its business entirely to manufacturing; its city mill and moulding depot handling millwork exclusively.

The city mill and moulding depot consists at present of a large builders' supply depot at 126 West Mission street, in fact the largest in the city, and a planing mill at 147 Beach street, between Stockton and Powell streets. The supply depot, at 126 West Mission street, will in time carry the most complete line of stock building material ever attempted by any firm in San Francisco, and will be able to furnish the mill work complete for any ordinary building out of its racks and warehouses, including all styles of paneling, art mouldings, compo work, mantels, stair work and all interior finishing and case work. The planing mill, at 147 Beach street, handles all the contract work, and since the first wheel turned has had a hard time to keep ahead of its orders, and while other plants have had to lay off their crews this mill has been compelled to increase its capacity of production and the management has seriously considered the advisability of running two shifts to supply the increased demand for stock from the West Mission street depot. This excessive amount of work is due largely to the efforts of Mr. John T. Quirk, one of the best known mill men in San Francisco, who has entire charge of all the outside business. The policy of this business has also helped to make it immediately popular, the management realizing that the abnormal conditions caused by the fire have gradually disappeared and has endeavored in every way to meet the change by placing its business dealings on the same footing as they were before the fire.

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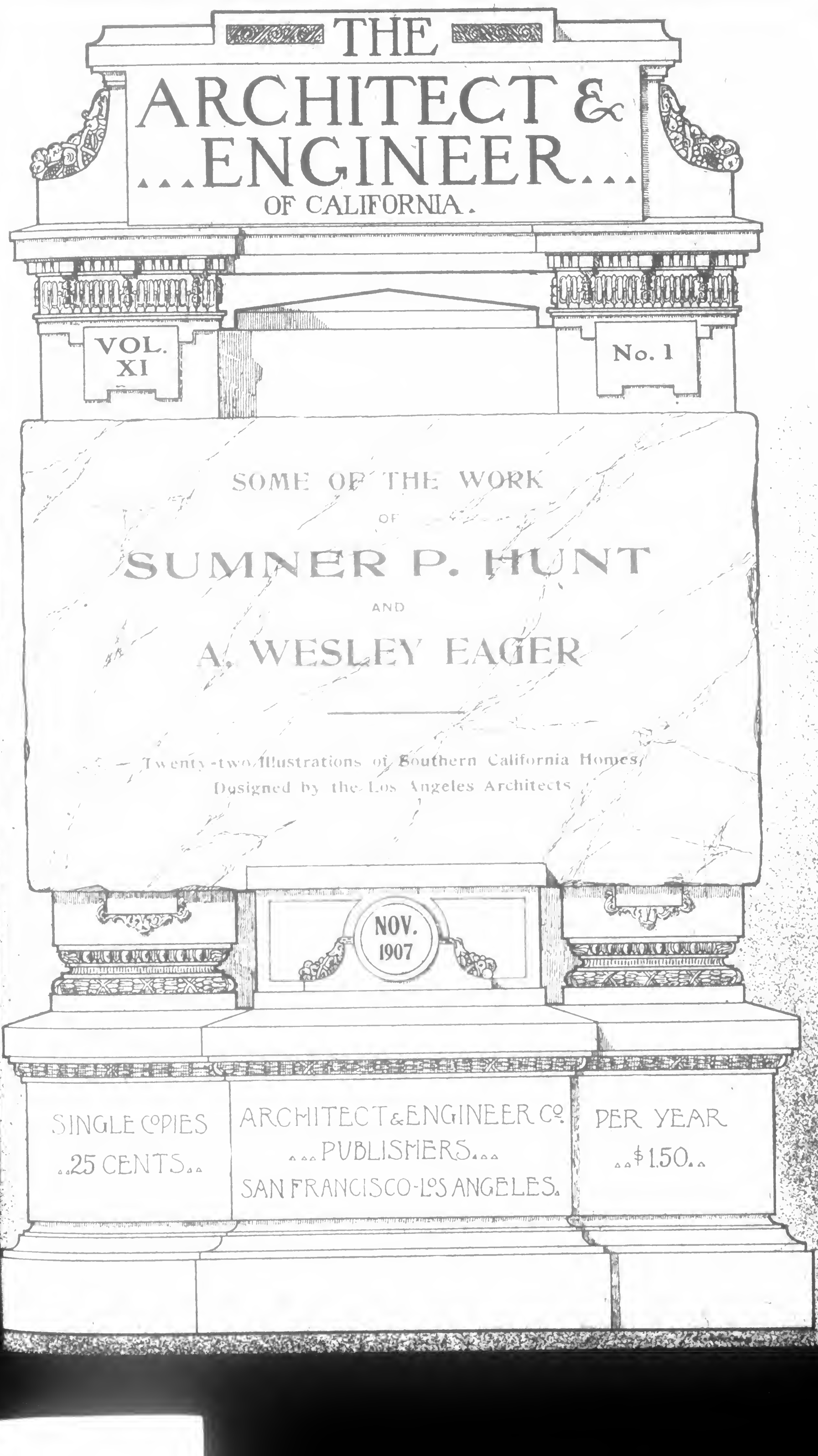

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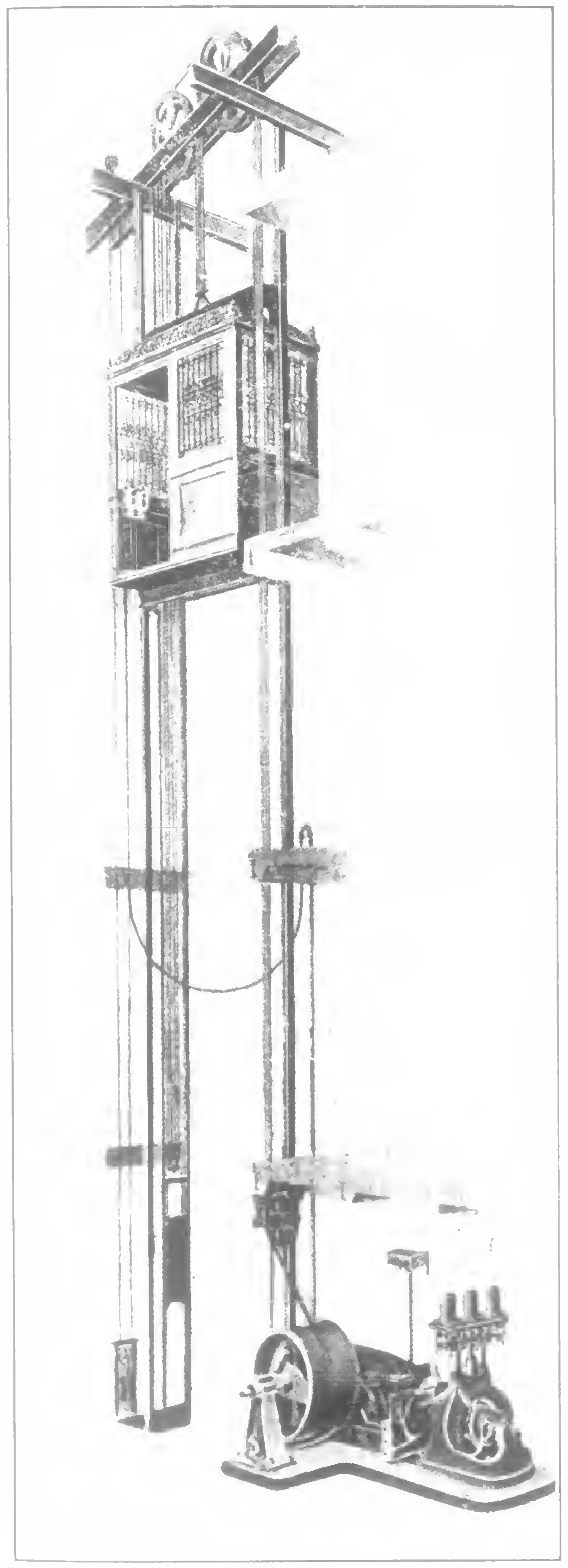

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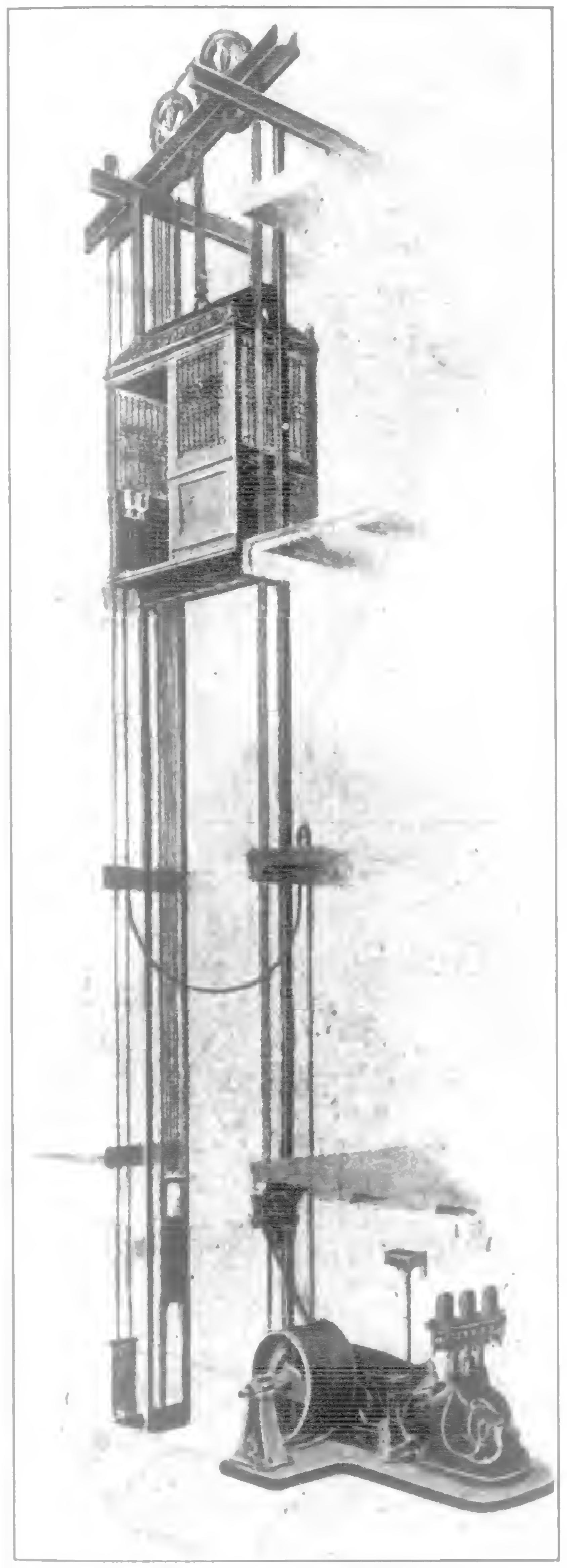

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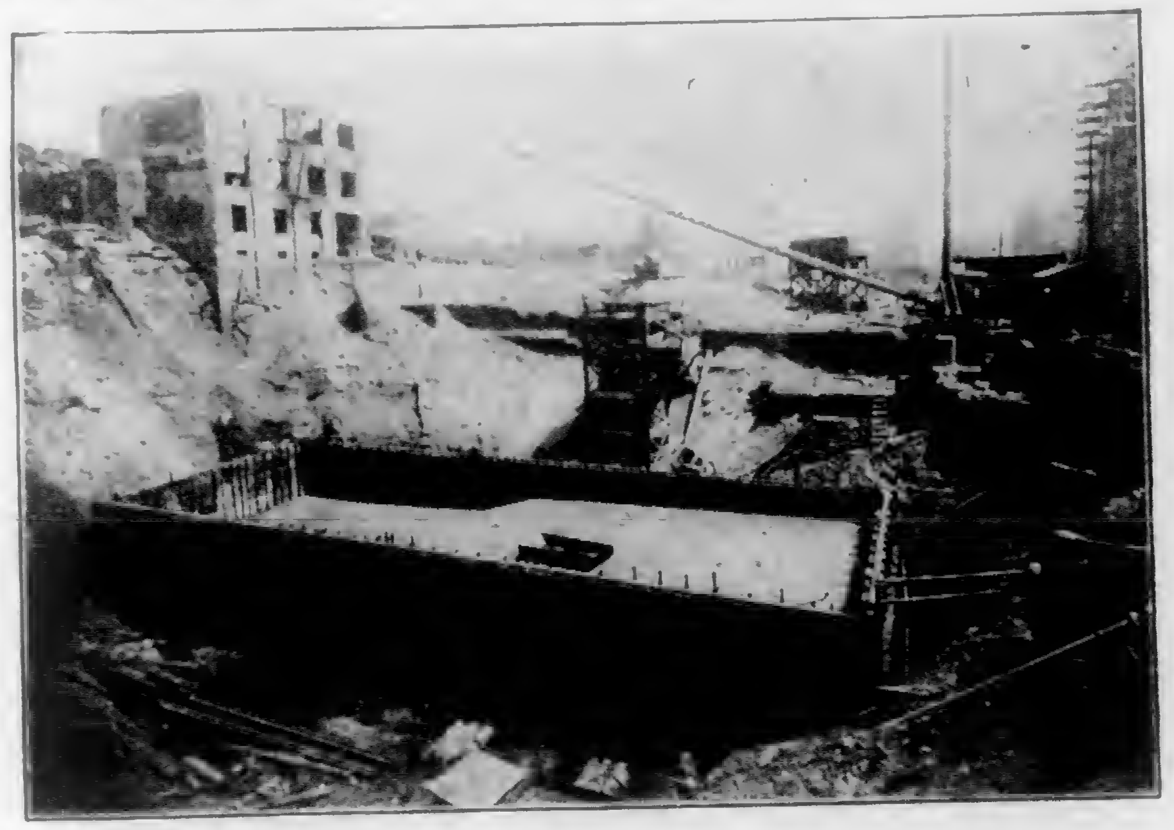

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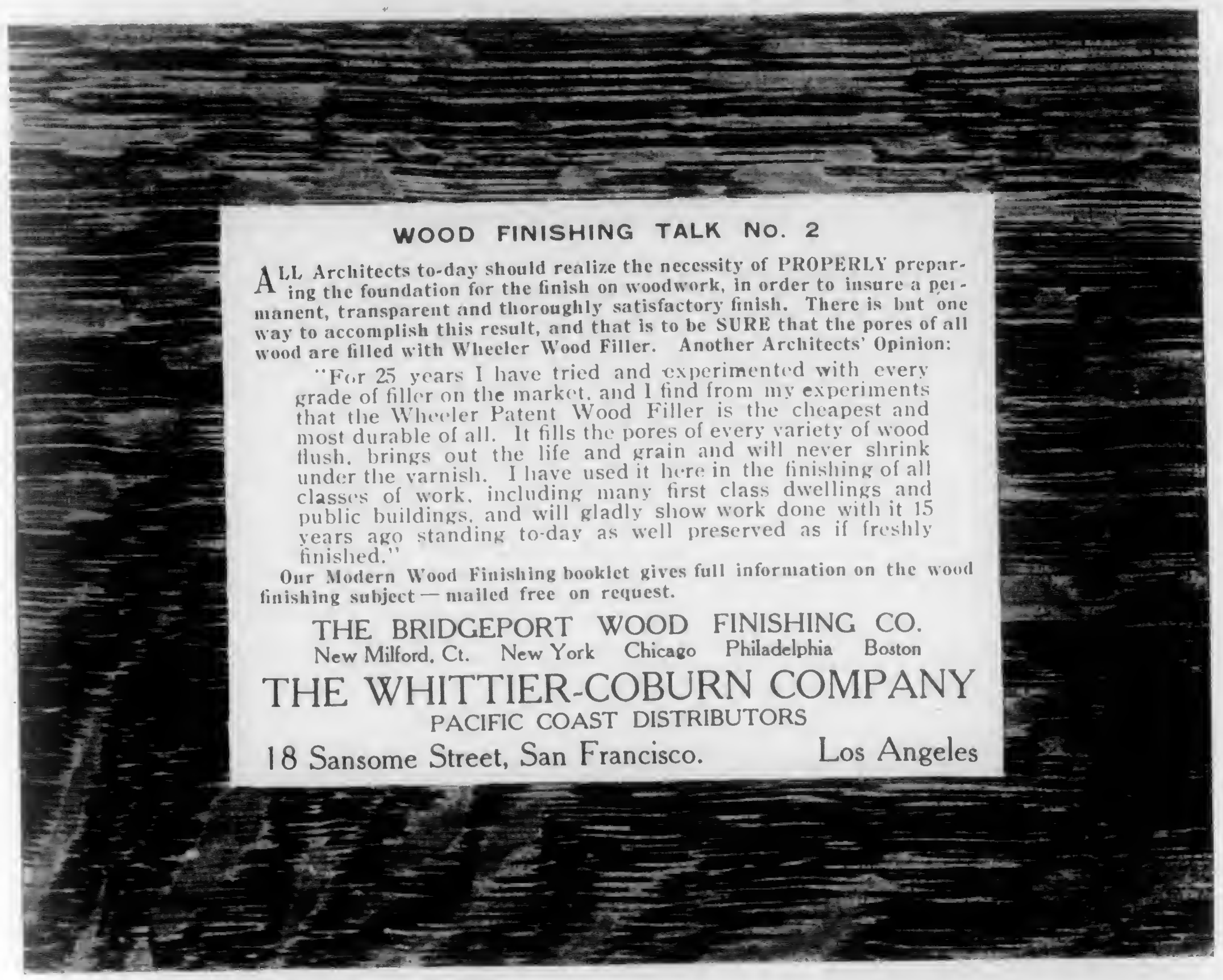

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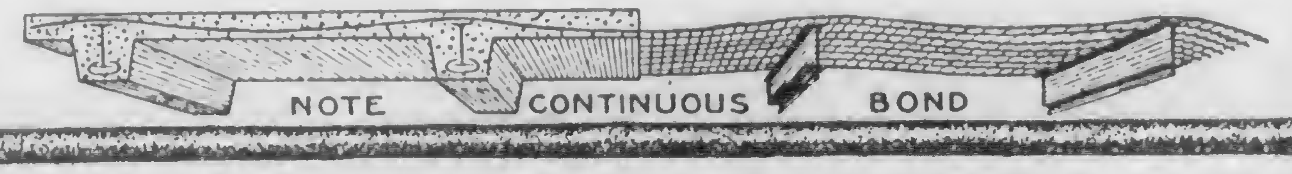

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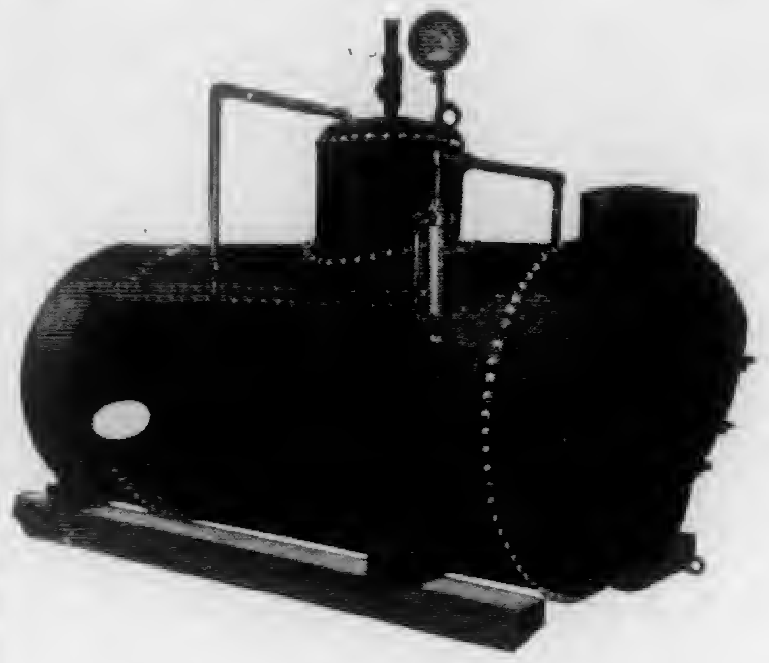

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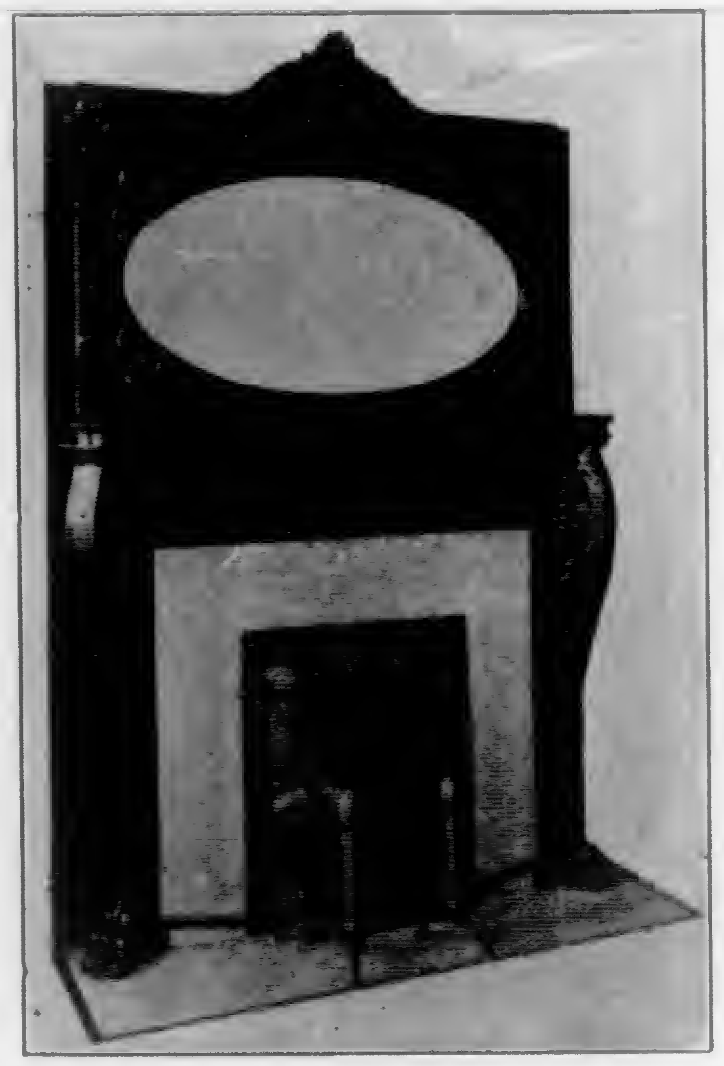

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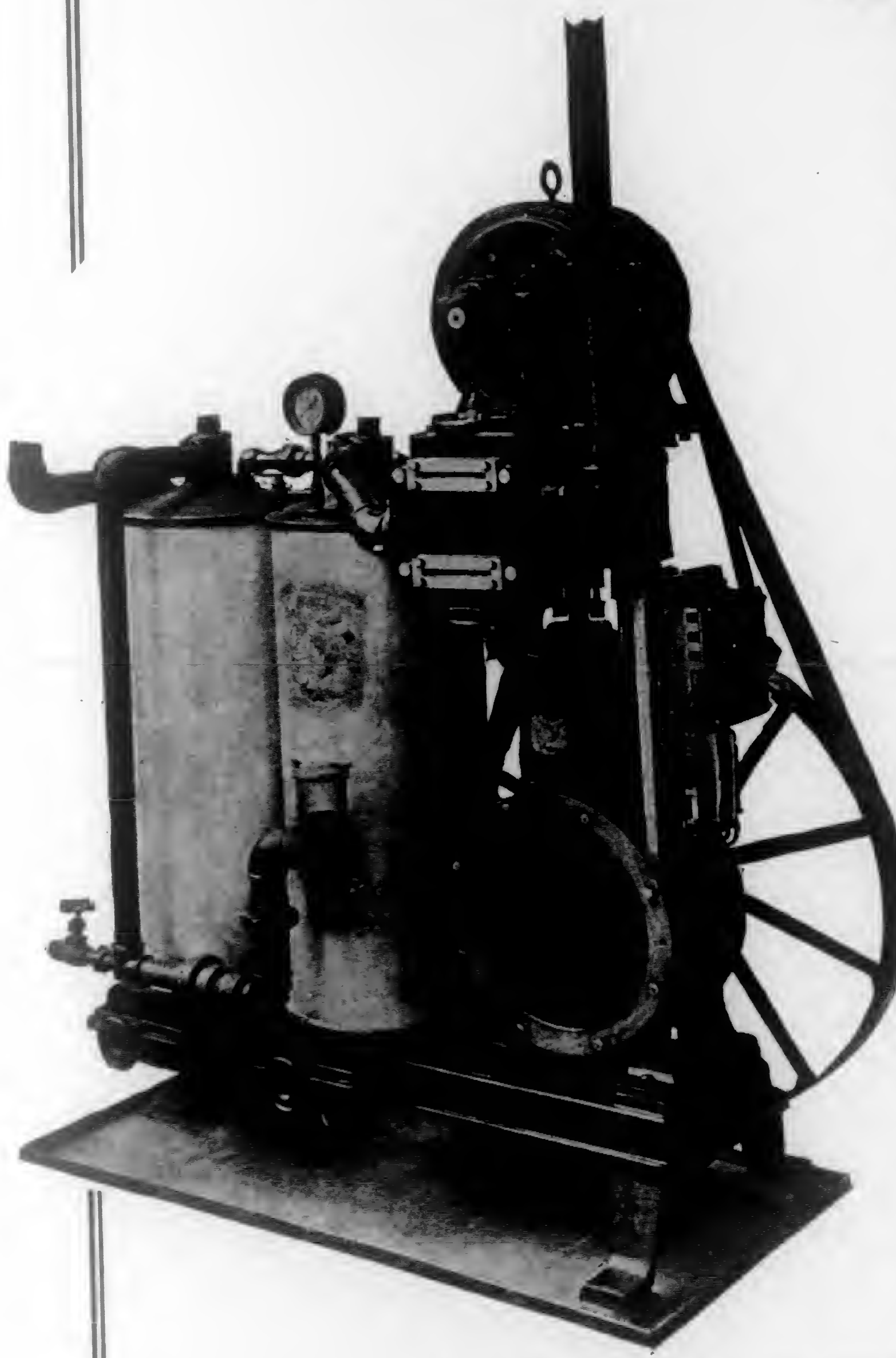

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4	.502	.1979	13,040	65,890	17,620	89,030	1.60"	20.0%	44.0%
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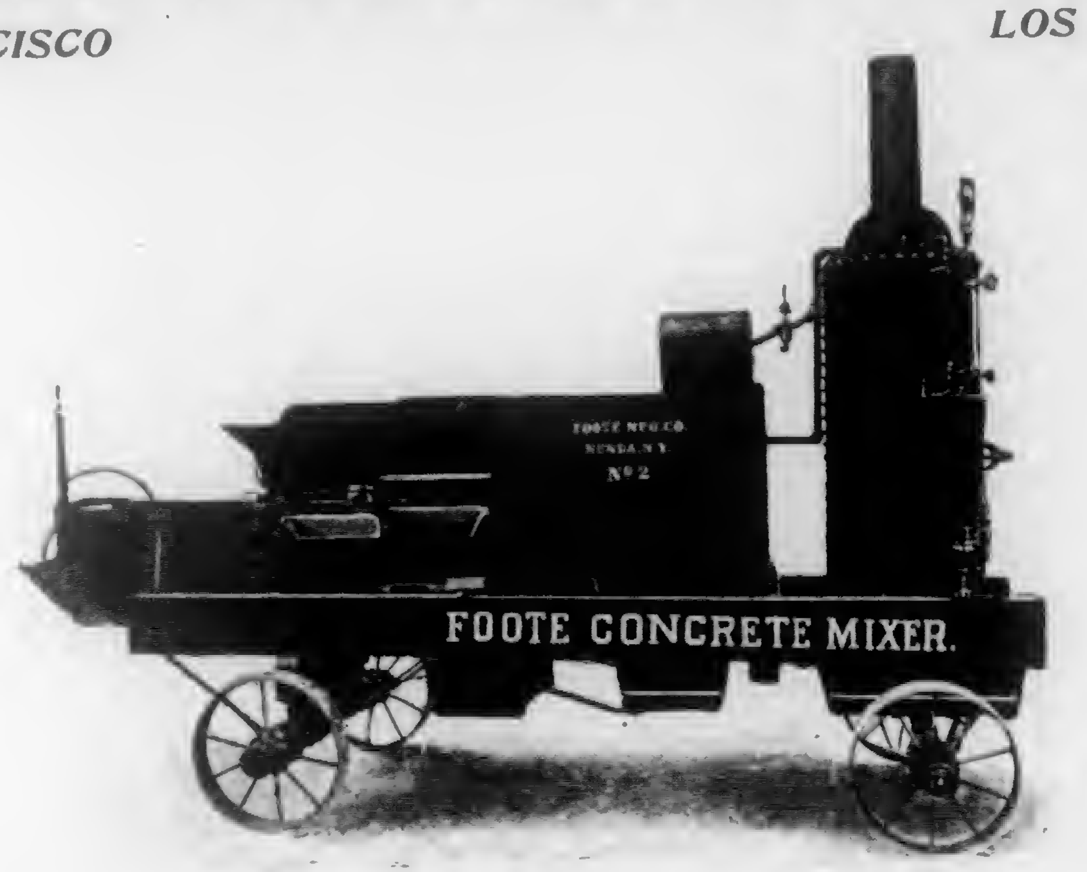

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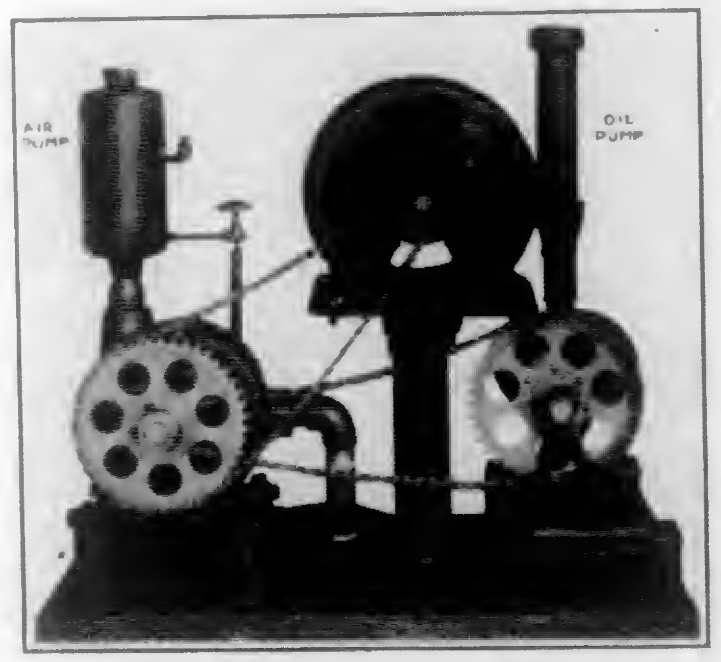

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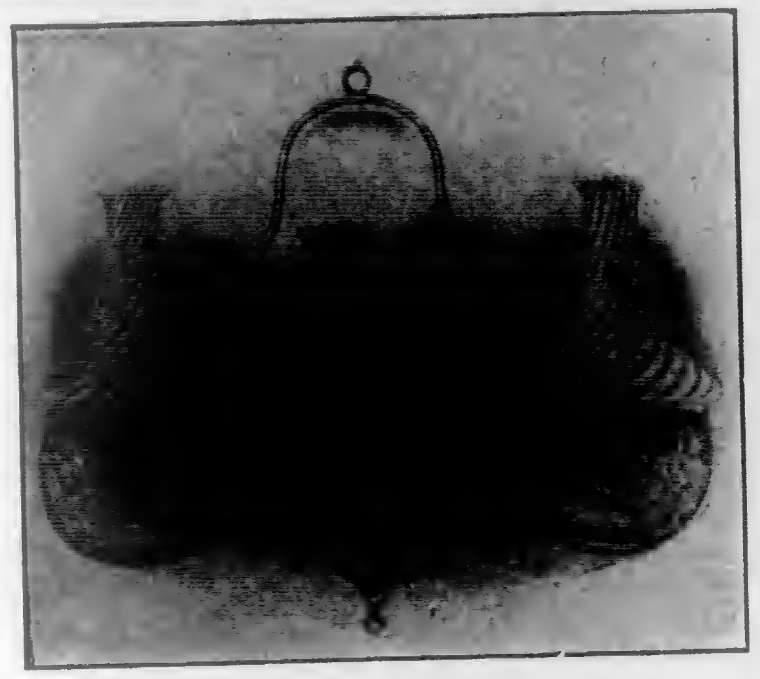

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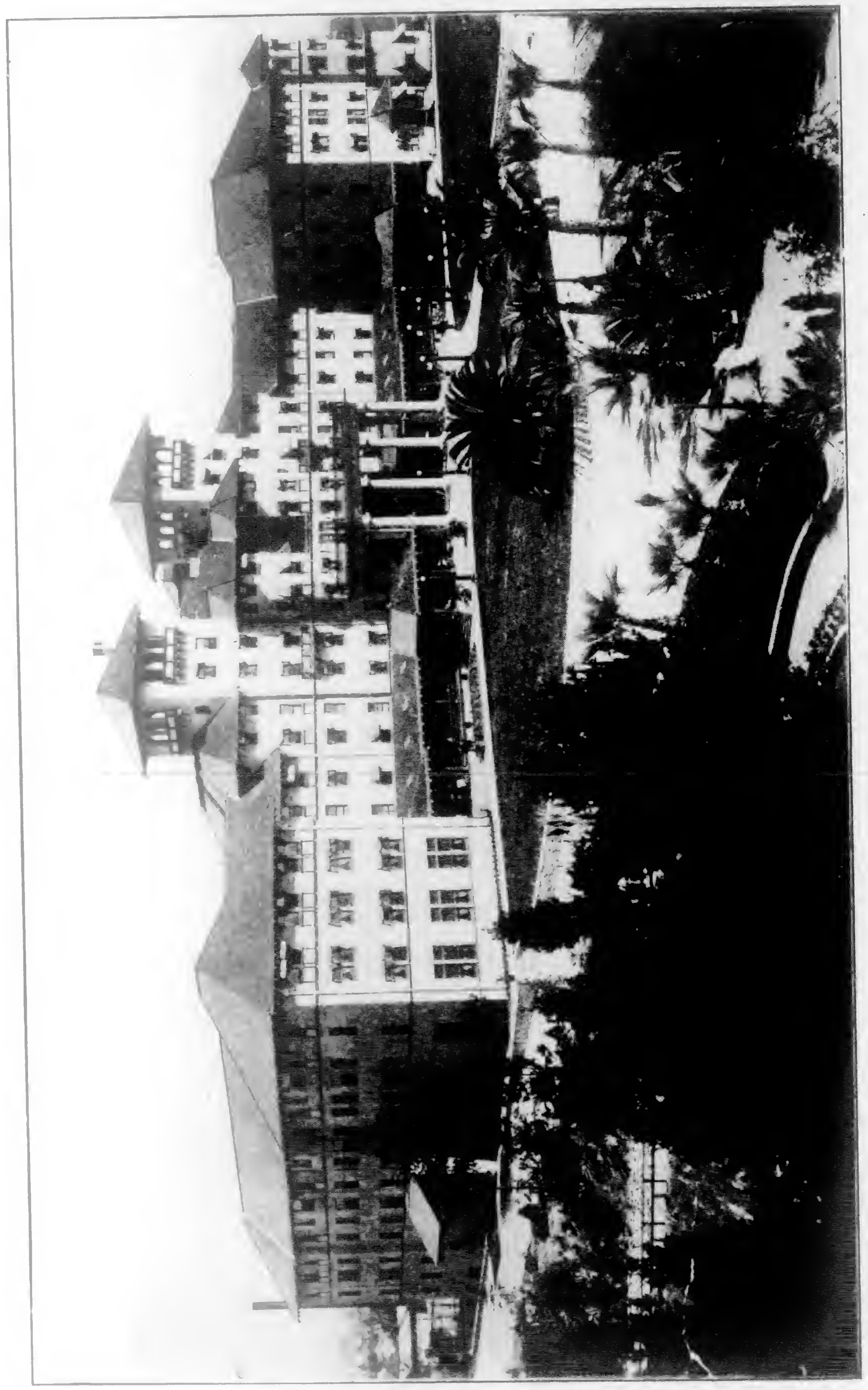

Frontispiece, The Architect and Engineer of California, November, 1907

The Raymond Hotel, Pasadena, Cal.
Hunt and Eager, Architects

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VOL. XI. NOVEMBER, 1907. No. 1.

Some of the Work of Sumner P. Hunt and A. Wesley Eager, Architects

FROM the reign of the jig-saw and turning lathe, it is a far cry to the present clean cut, straightforward, domestic architecture of Southern California.

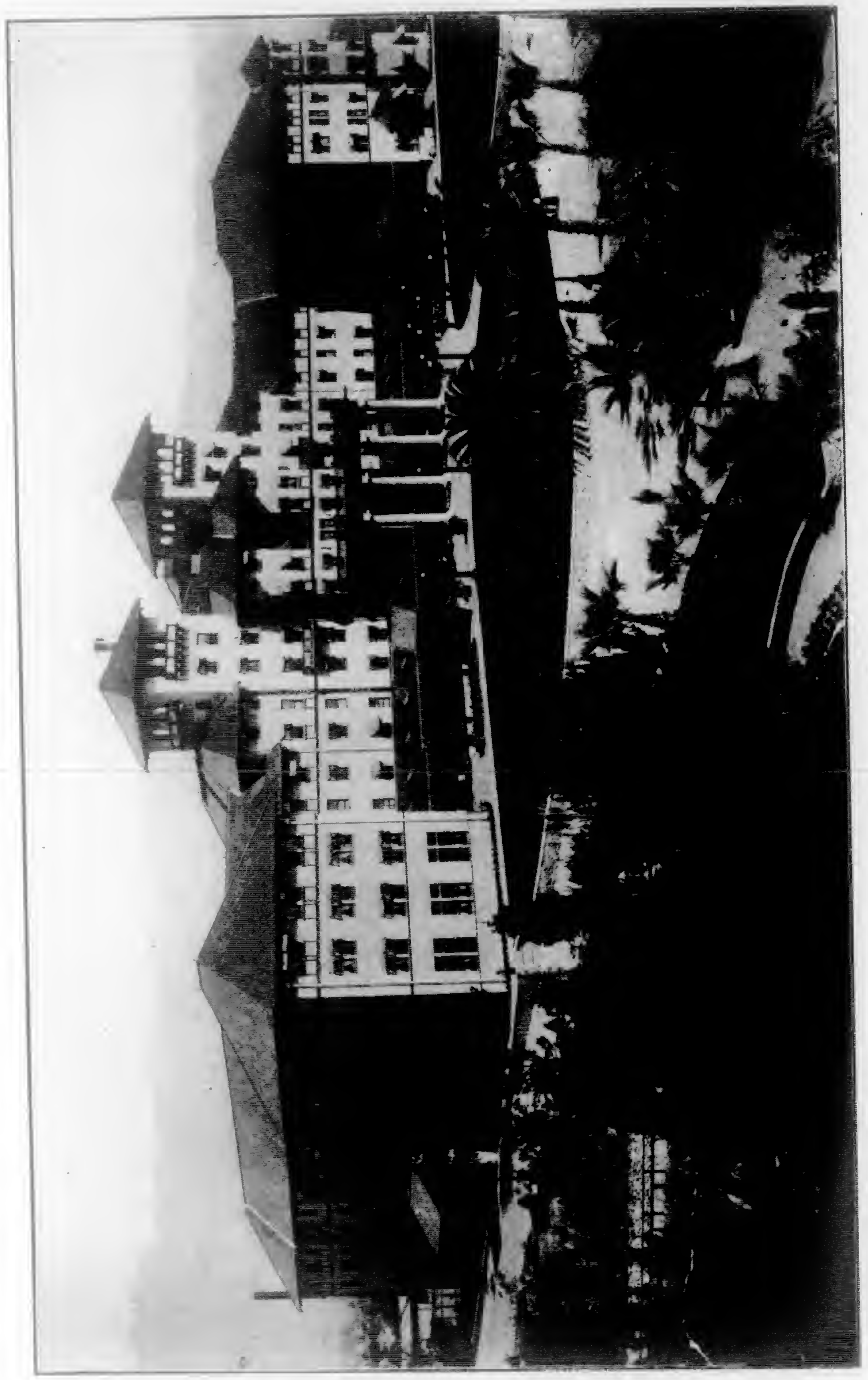
Very complete has been the transition of the last decade, and today no one thing more strongly impresses the observer than the character of California homes and their surroundings, their fitness and air of belonging to the locality. Not only is this evident in the more costly and elaborate homes, but in the modest cottage, the rambling bungalow—charming in their simplicity—yet in every way homelike.

Messrs. Hunt and Eager, having been schooled in the East, early recognized the futility of attempting to transplant Eastern architecture to the climate of Southern California, and at once set about to evolve a harmonious and consistent treatment for local domestic work.

In many cases, the late domestic English fits surprisingly well; in certain locations the French Chateau style seems quite at home; while among the hills and cañons a Swiss treatment suggests itself, and in the lowlands the Mission type.

These gentlemen have carefully studied the various types, always inspired by the location and surroundings, with a result peculiarly distinctive and characteristic.

The long roof lines, the broad overhang, inviting entrances, spacious verandas and pergolas everywhere to be seen in their work, show how the ways and likes of their clients have been considered, and with the studied lines of the landscape work, each problem presents as a whole a harmonious blend. While in some cases the work may not have the true ring of the style adopted, this is due to the modification of the motif to meet the local requirements, but we believe in general the results have been successful—just how entirely so may be left to the judgment of the reader, who will find in the following pages some striking photographs of Hunt and Eager's residence work.



Frontispiece, The Architect and Engineer of California, November, 1907

The Raymond Hotel, Pasadena, Cal.
Hunt and Eager, Architects

Equipped with Otis Elevators

THE
Architect and Engineer
Of California

Vol. XI. NOVEMBER, 1907. No. 1.

Some of the Work of Sumner P. Hunt and A. Wesley Eager, Architects

FROM the reign of the jig-saw and turning lathe, it is a far cry to the present clean cut, straightforward, domestic architecture of Southern California.

Very complete has been the transition of the last decade, and today no one thing more strongly impresses the observer than the character of California homes and their surroundings, their fitness and air of belonging to the locality. Not only is this evident in the more costly and elaborate homes, but in the modest cottage, the rambling bungalow—charming in their simplicity—yet in every way homelike.

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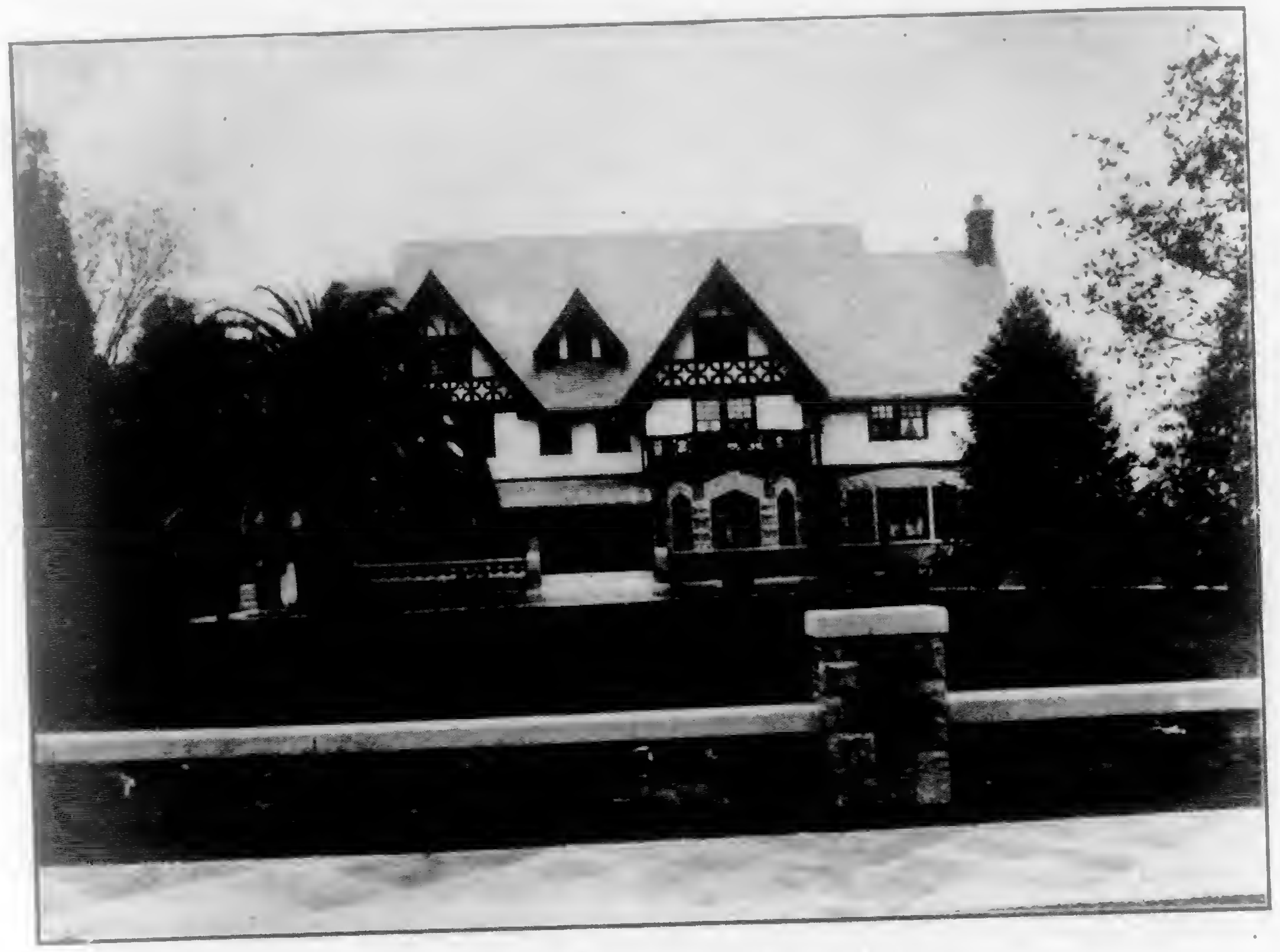
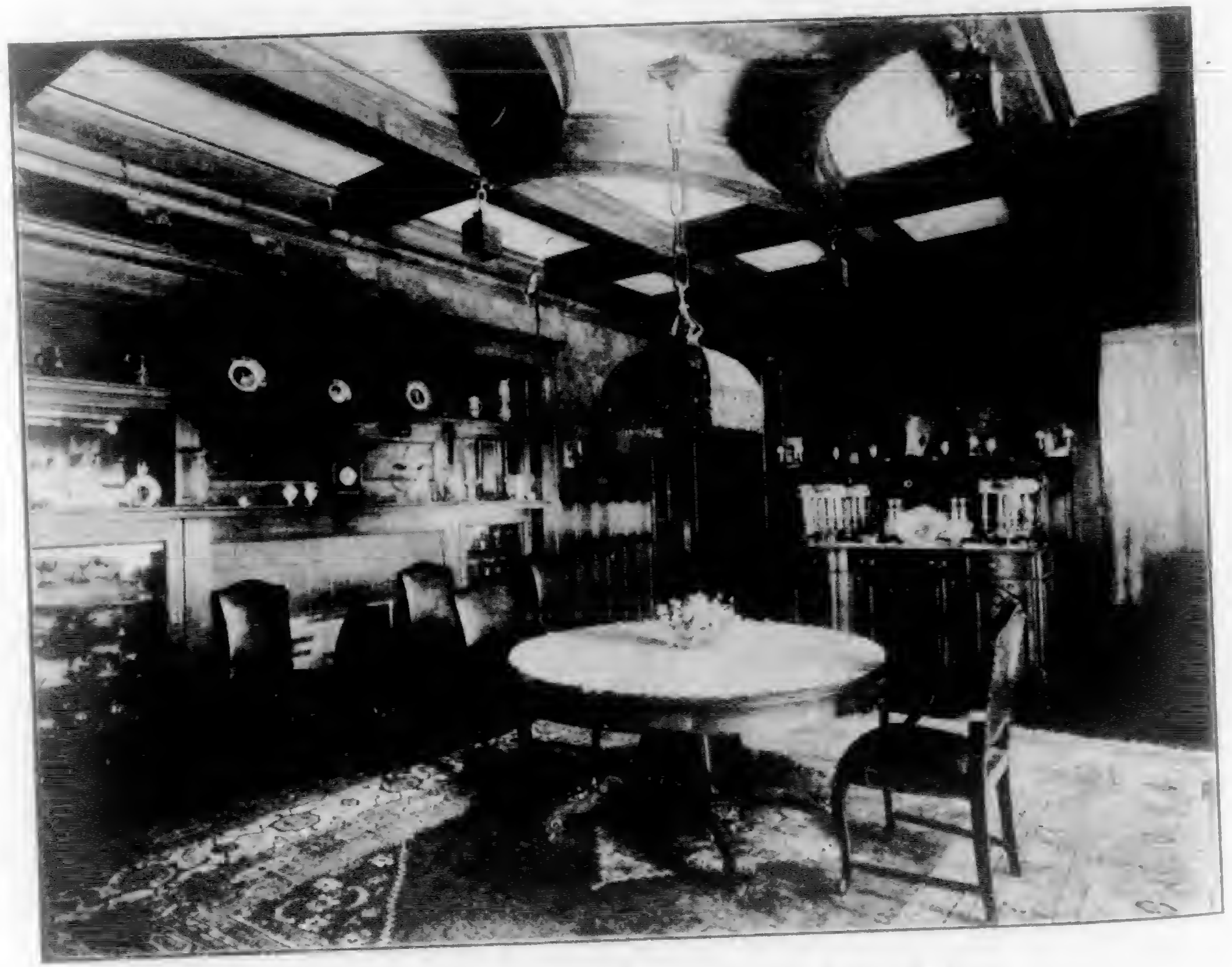
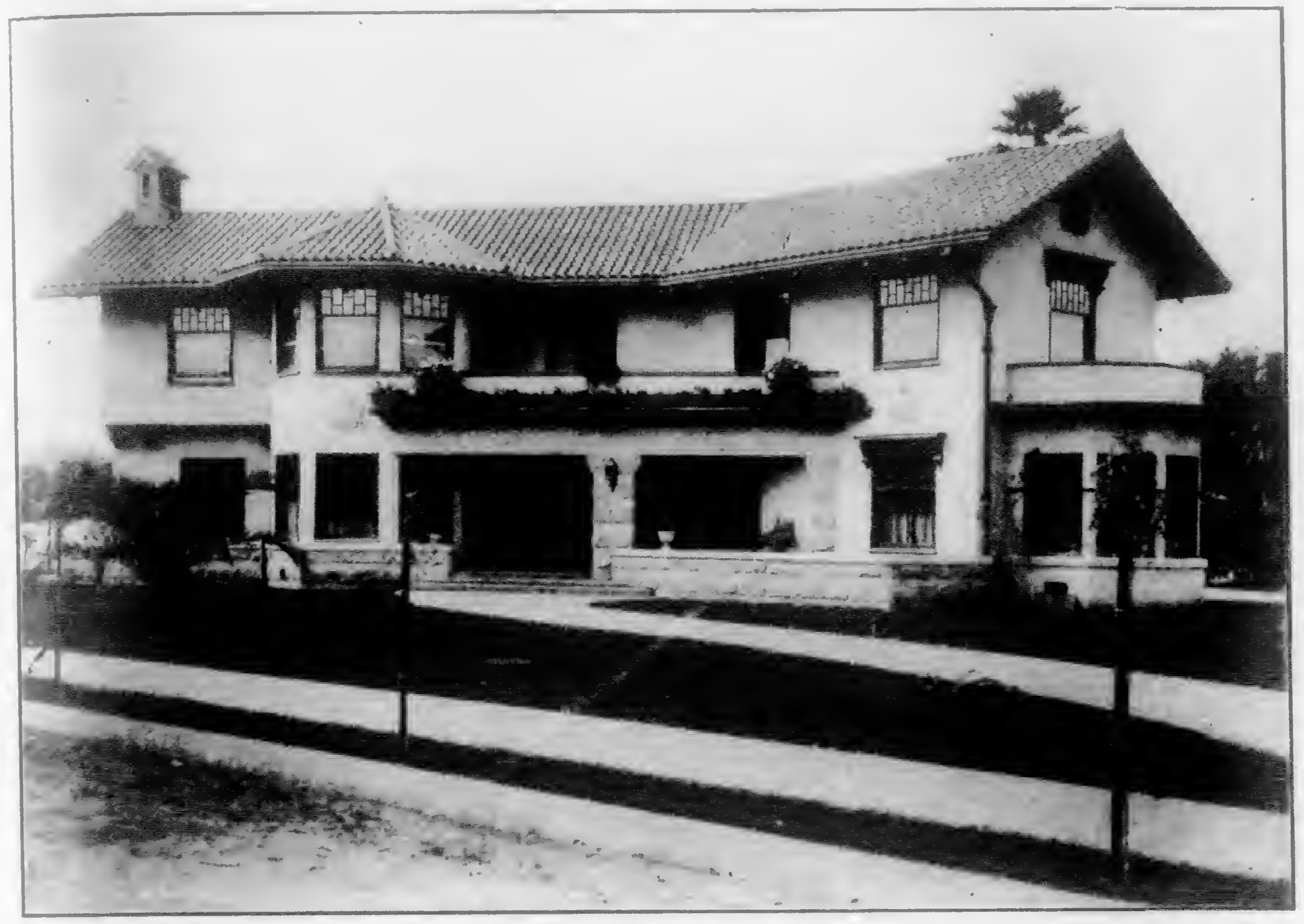


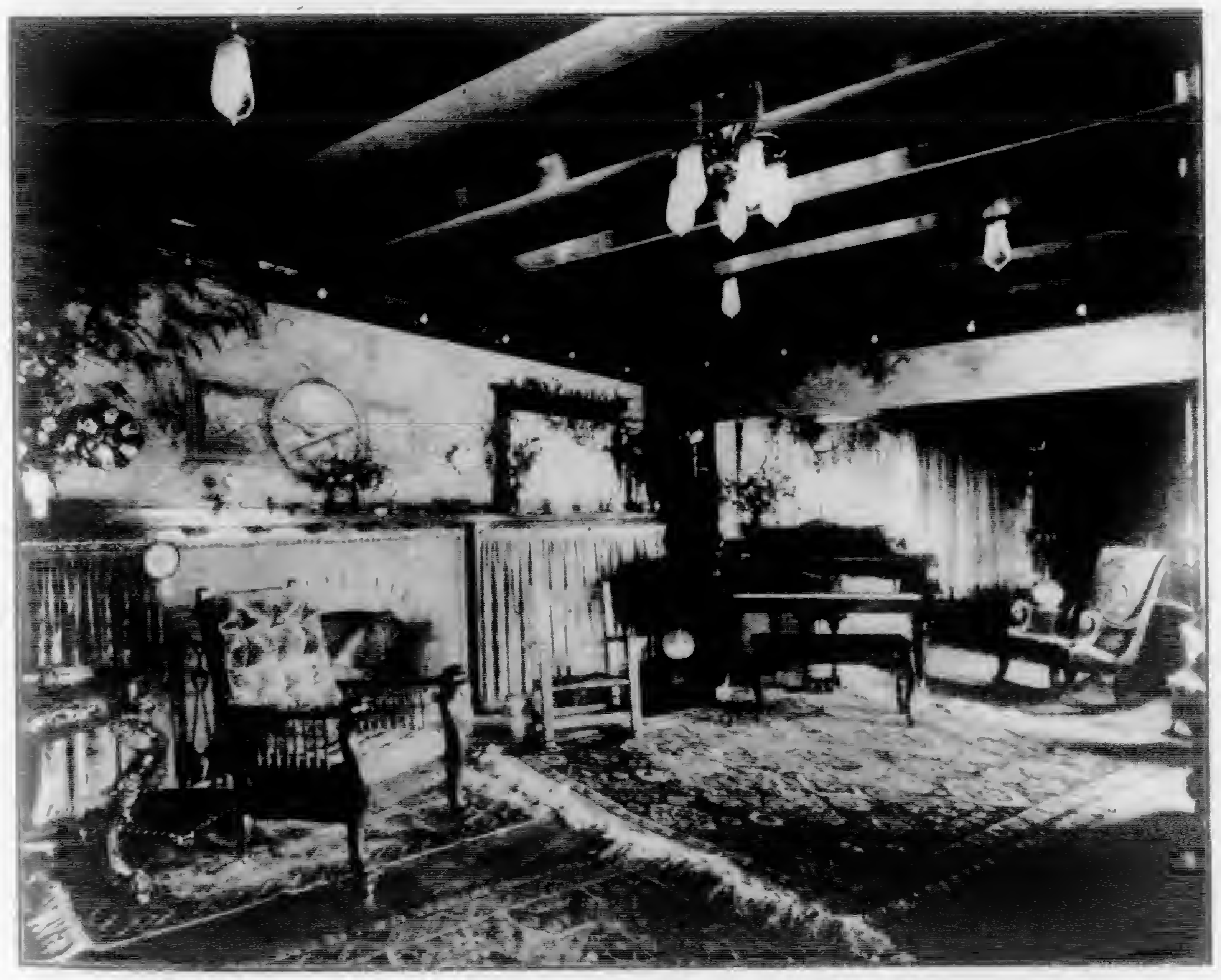
Residence of Mr. J. Ross Clark, Los Angeles
Hunt and Eager Architects



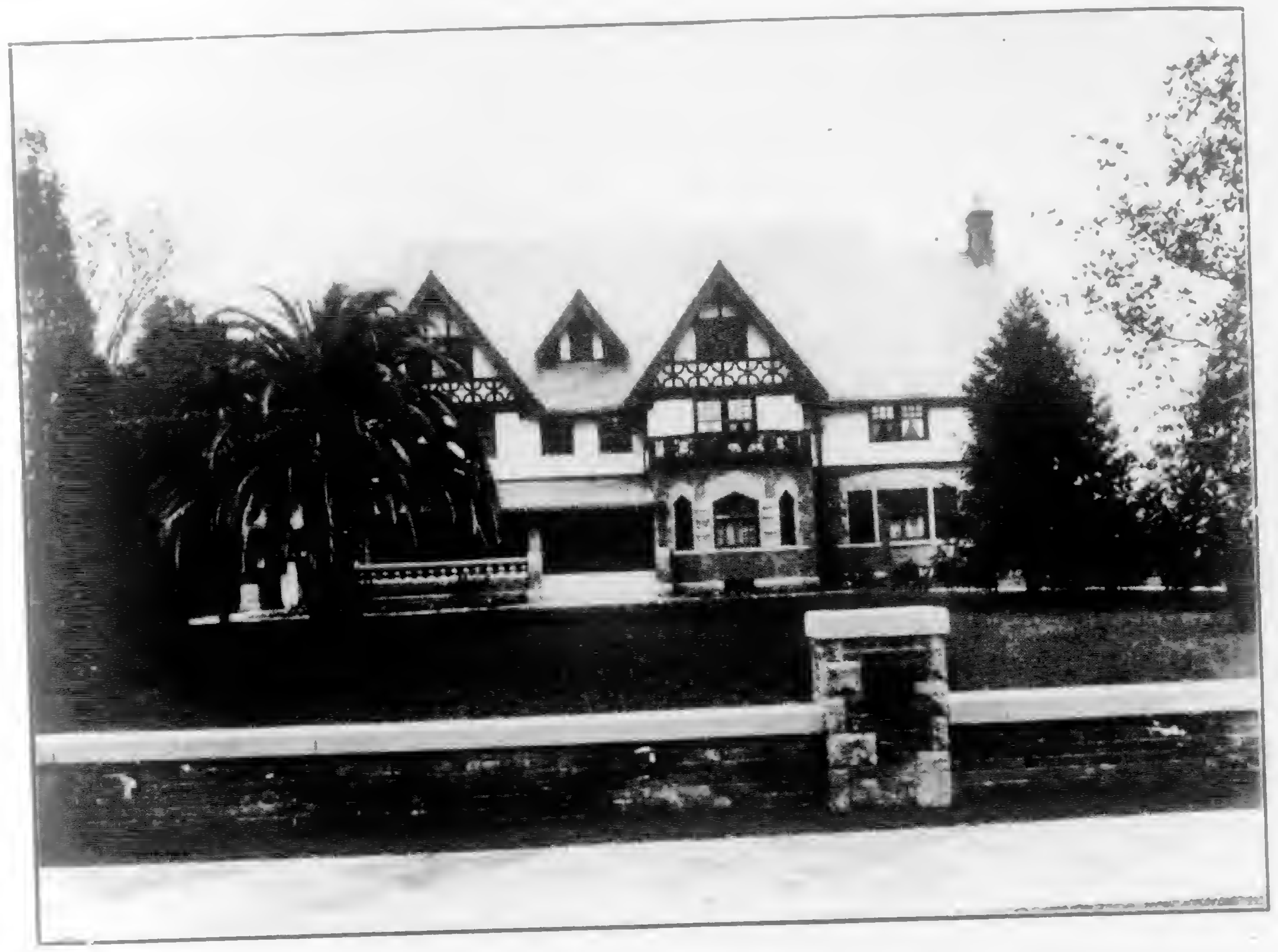
Dining Room, Residence of Mr. J. Ross Clark, Los Angeles
Hunt and Eager, Architects



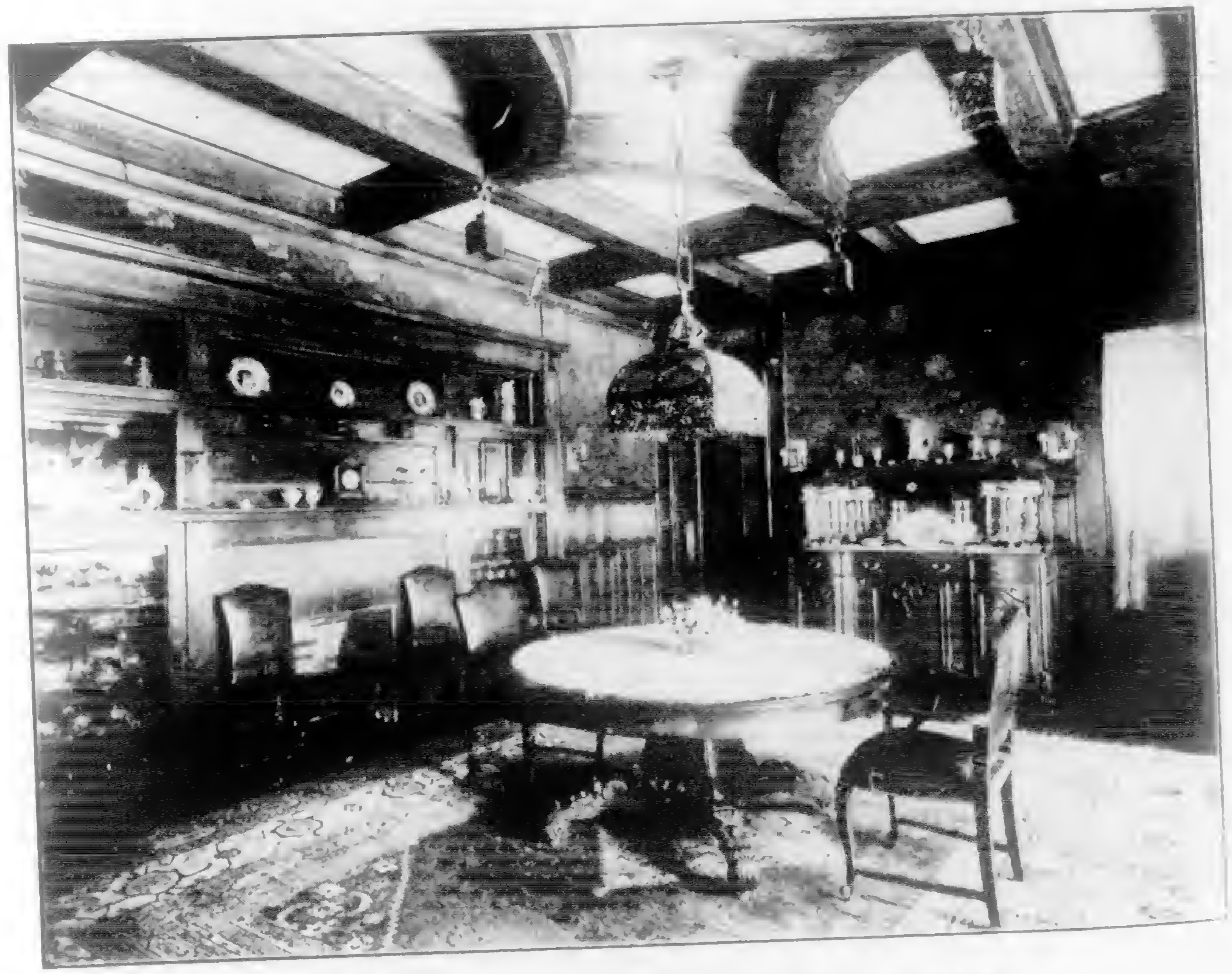
Residence of Mr. Frank K. Wilson, Los Angeles
Hunt and Eager, Architects



Living Room, Residence of Mr. Frank K. Wilson, Los Angeles
Hunt and Eager, Architects



Residence of Mr. J. Ross Clark Los Angeles
Hunt and Eager Architects



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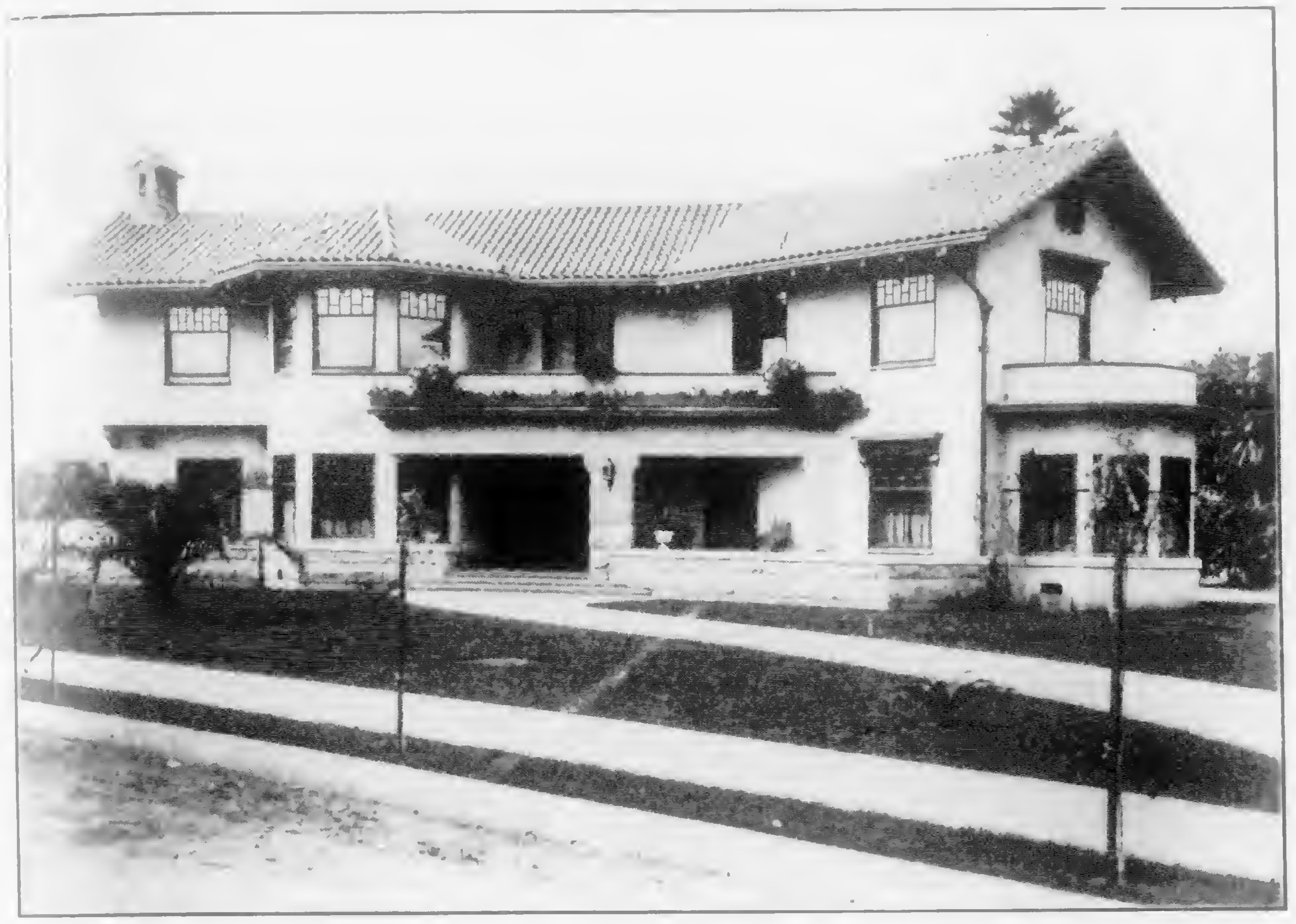

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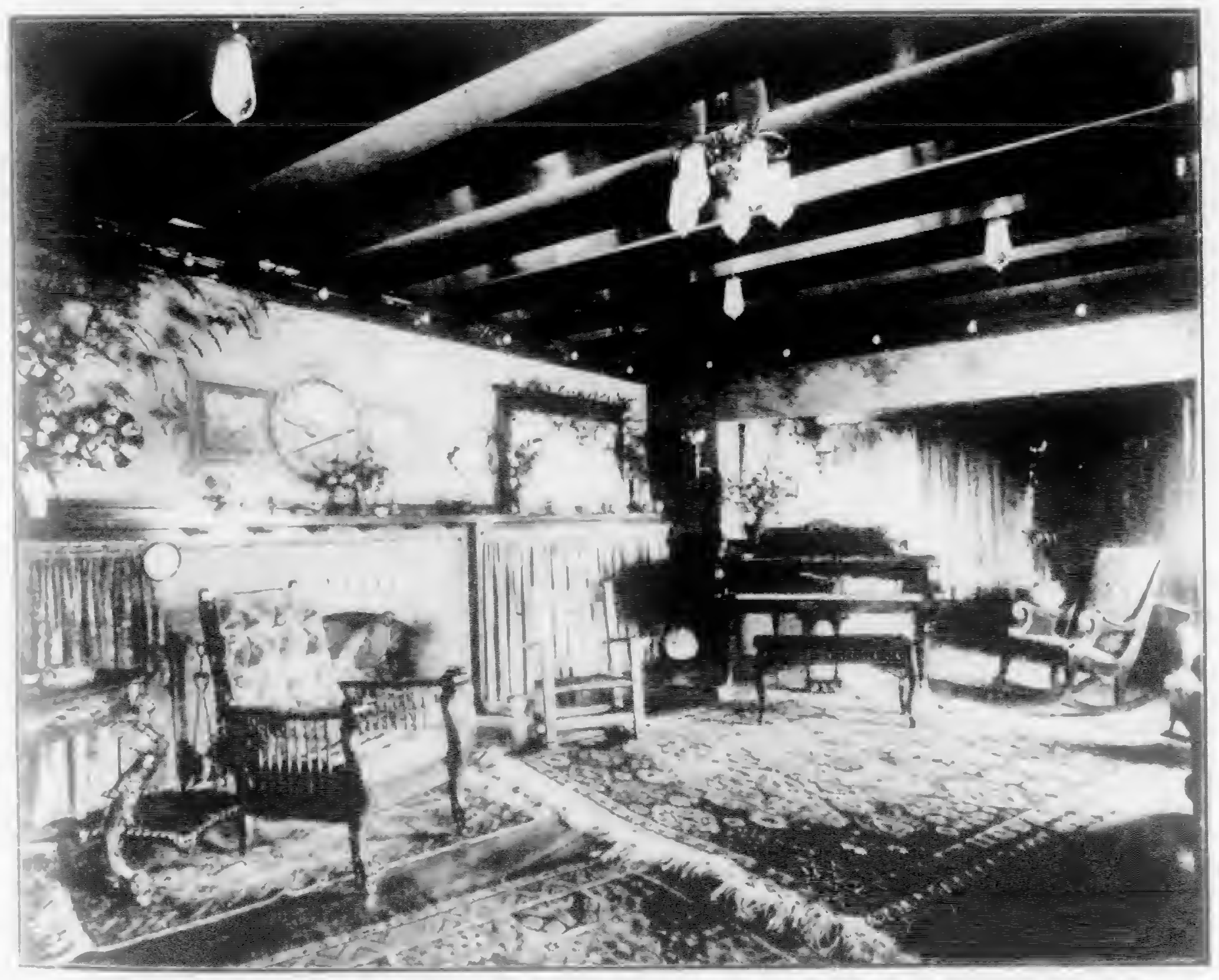

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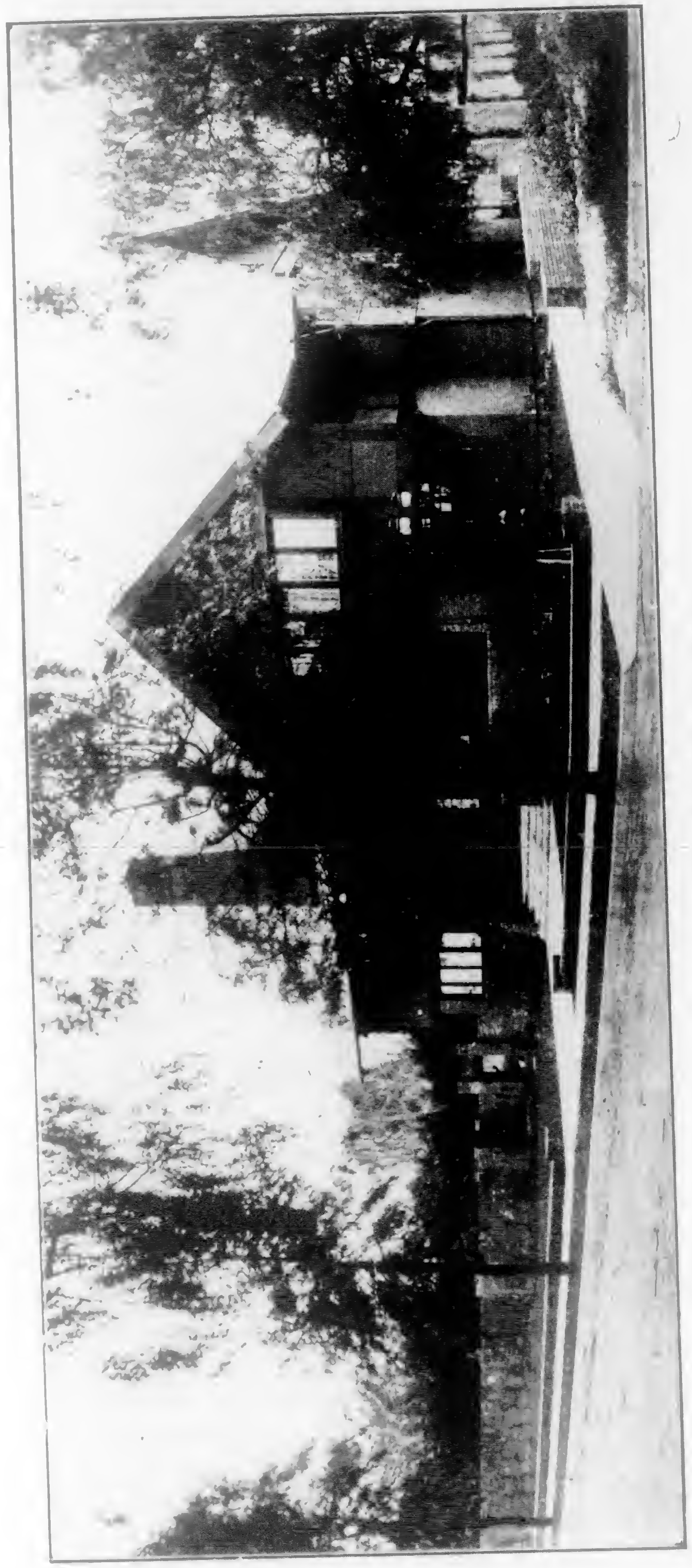
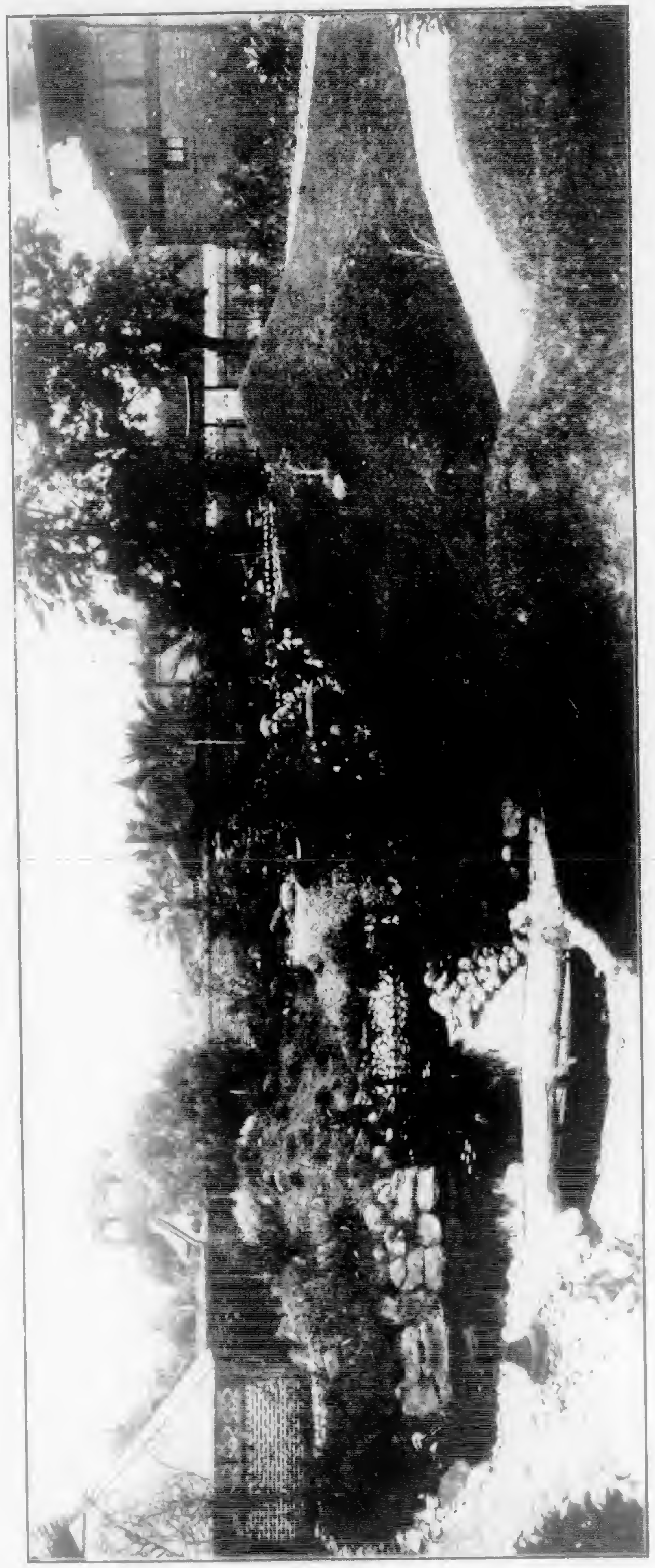
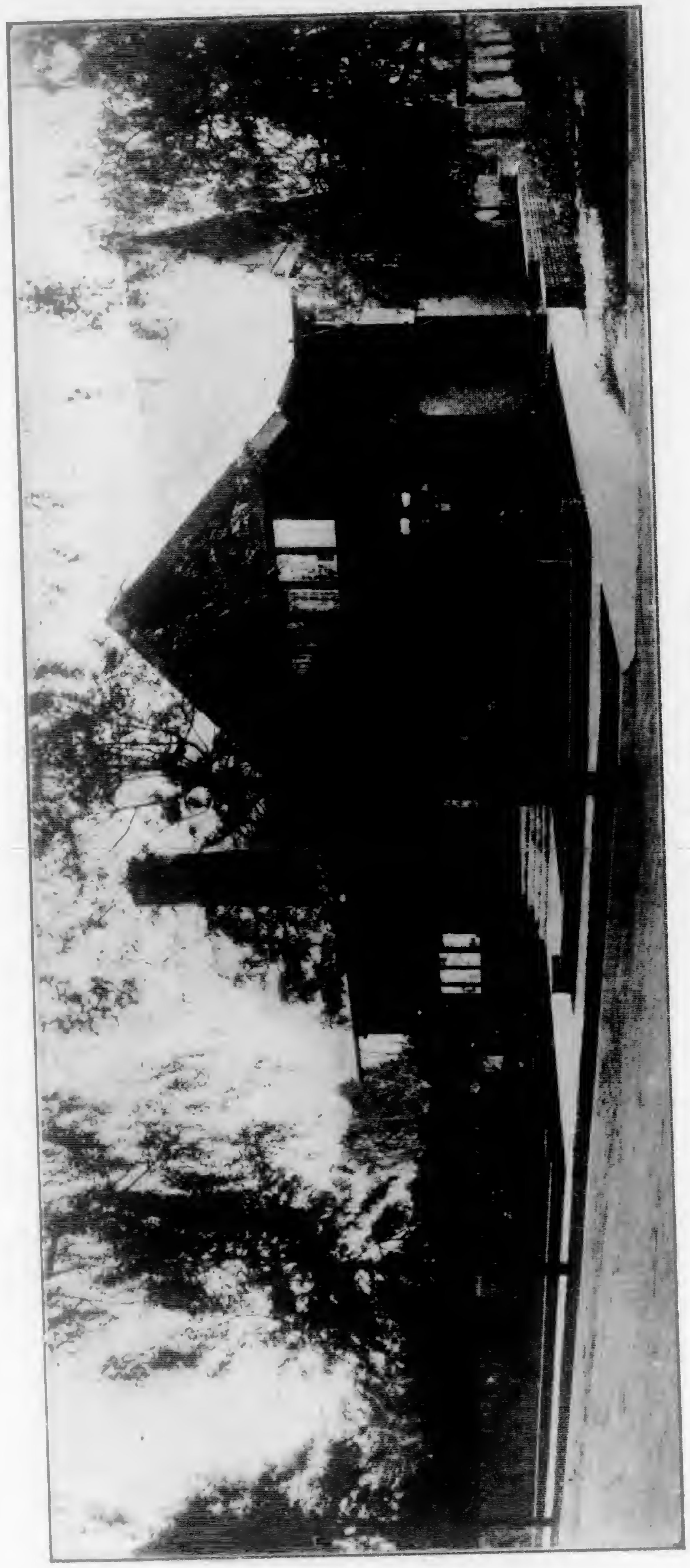
Hunt and Eager, Architects



Residence of Mr. R. H. Miner, Los Angeles.
Hunt and Eager, Architects



California Garden to Residence of Mr. R. H. Miner, Los Angeles.
Hunt and Eager, Architects



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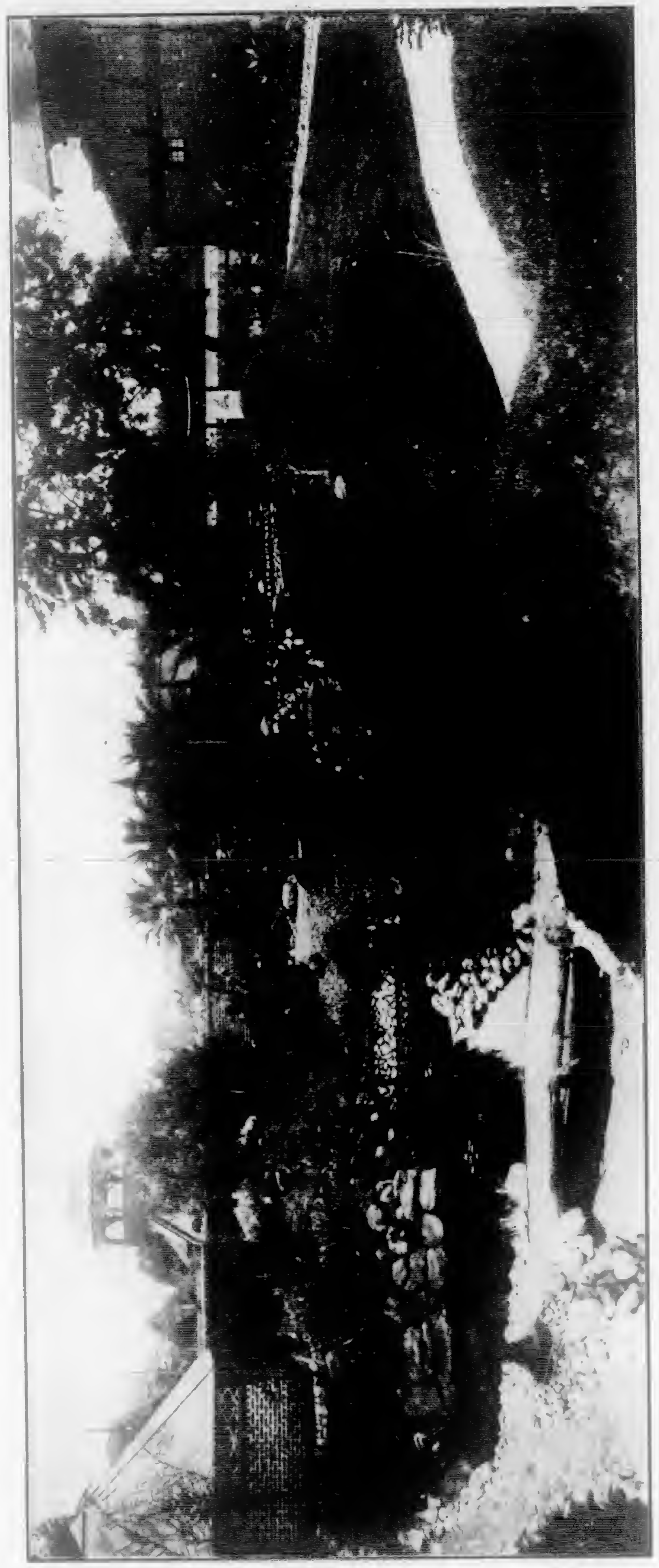

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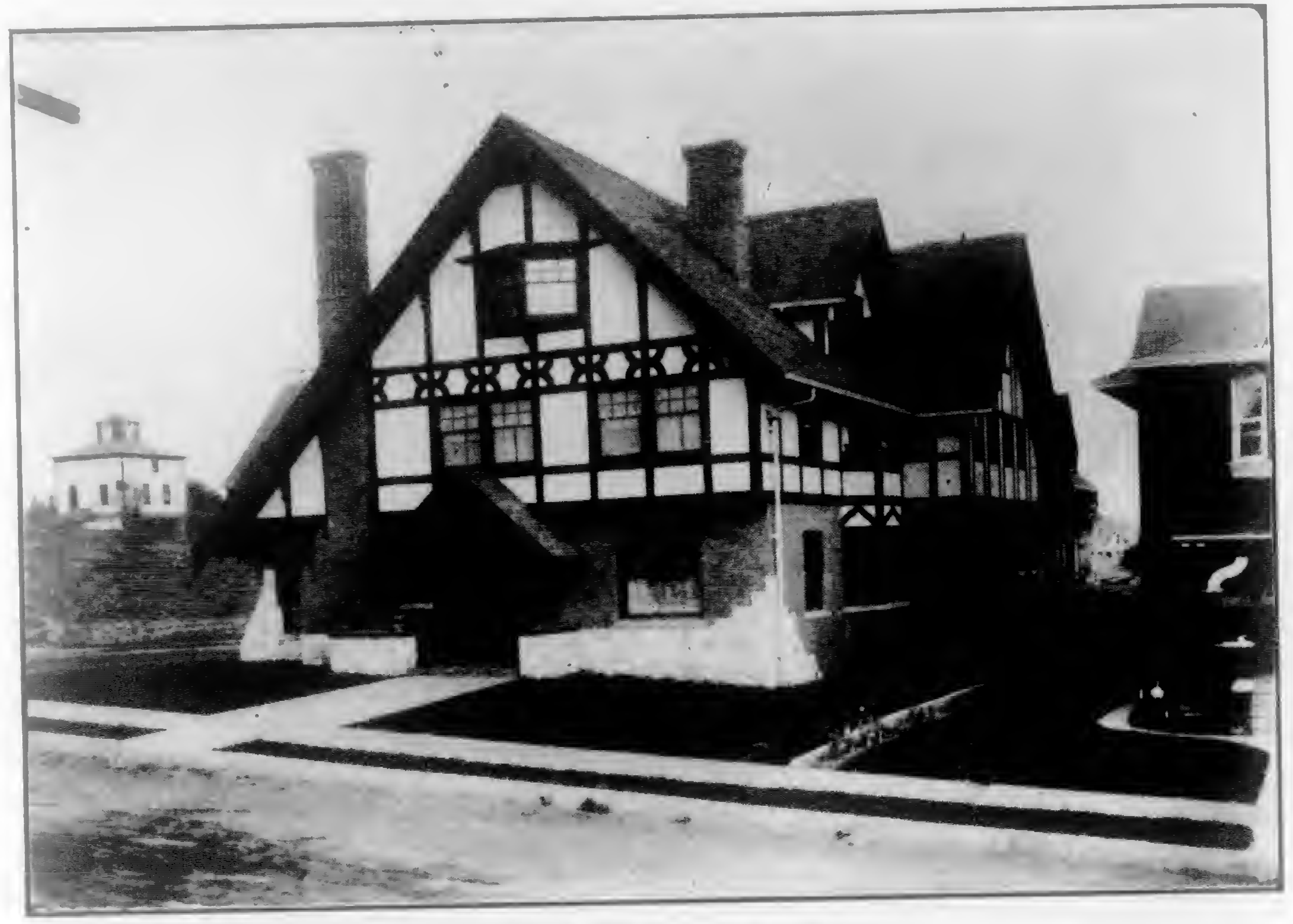
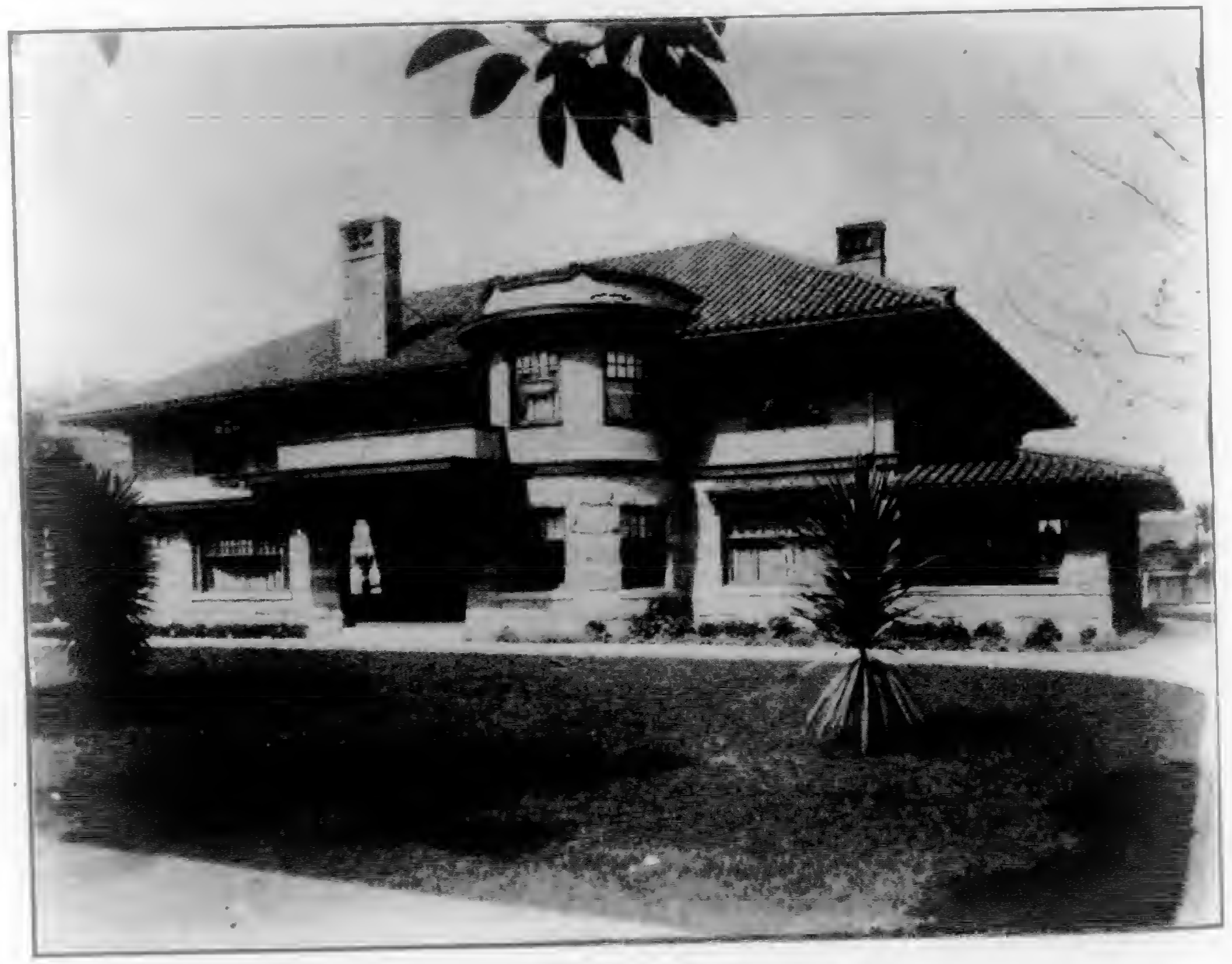
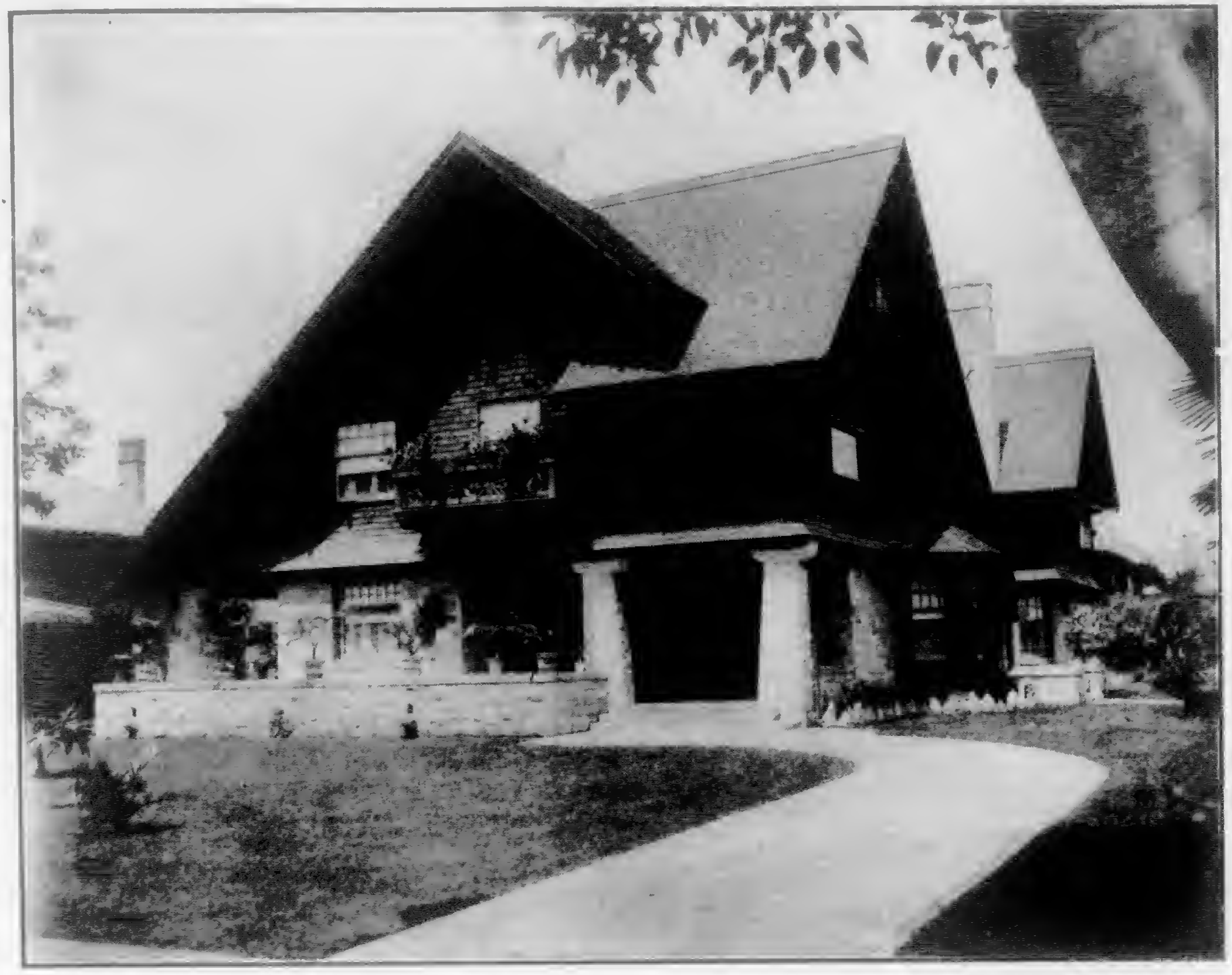


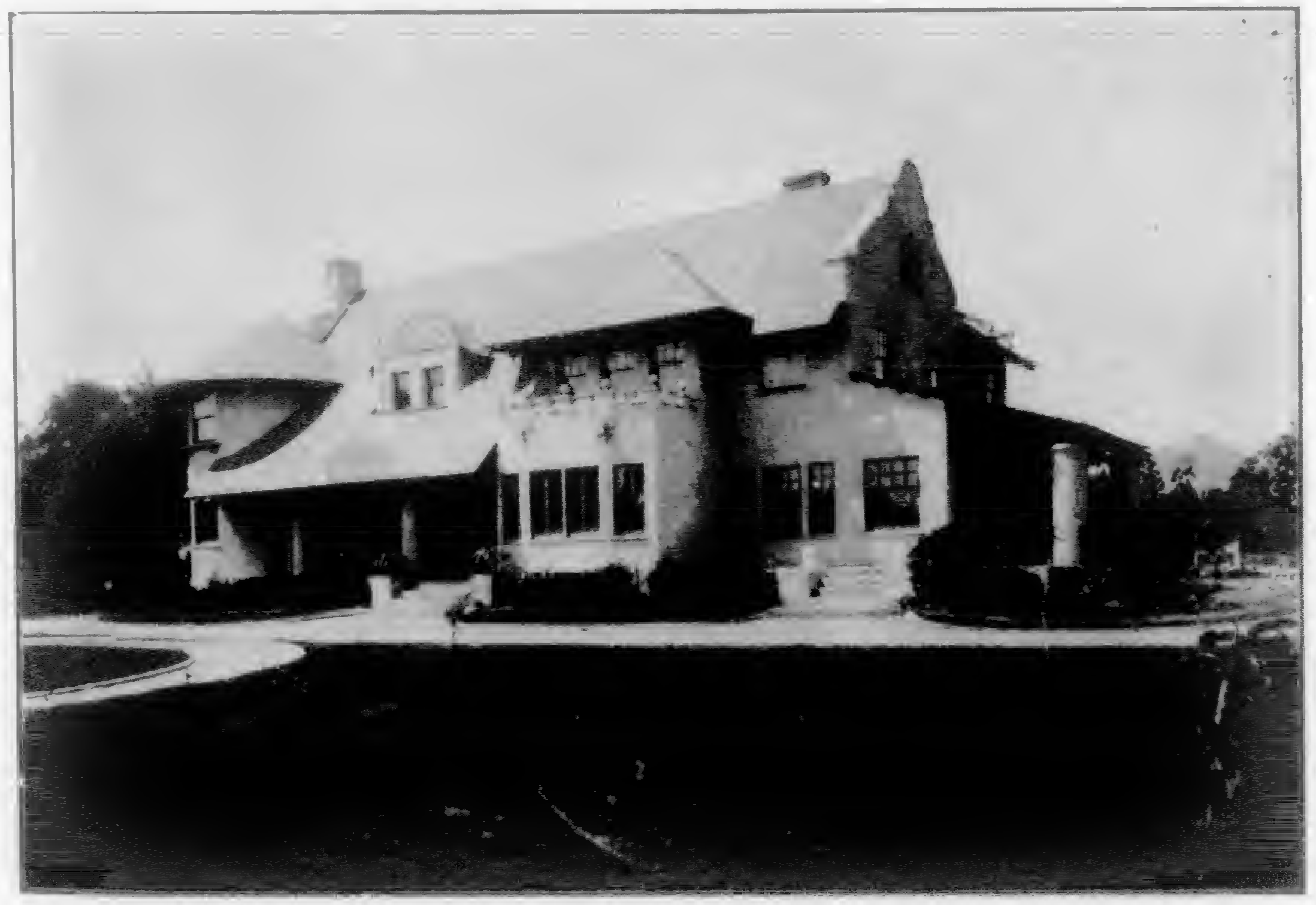
Residence of Mr. E. I. Stanton, Los Angeles
Hunt and Eager, Architects



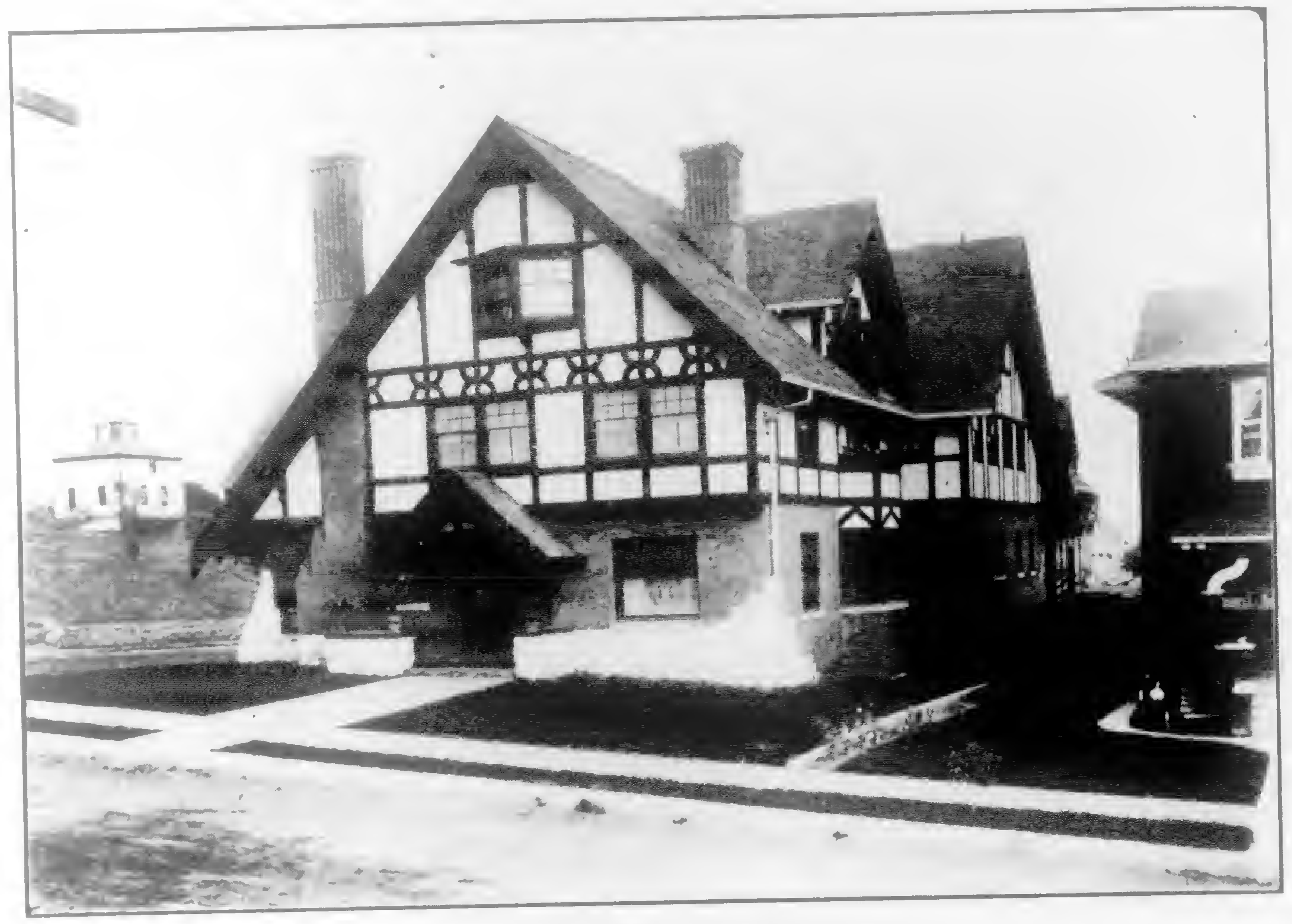
Residence of Mrs. Lee Foster, Los Angeles
Hunt and Eager, Architects



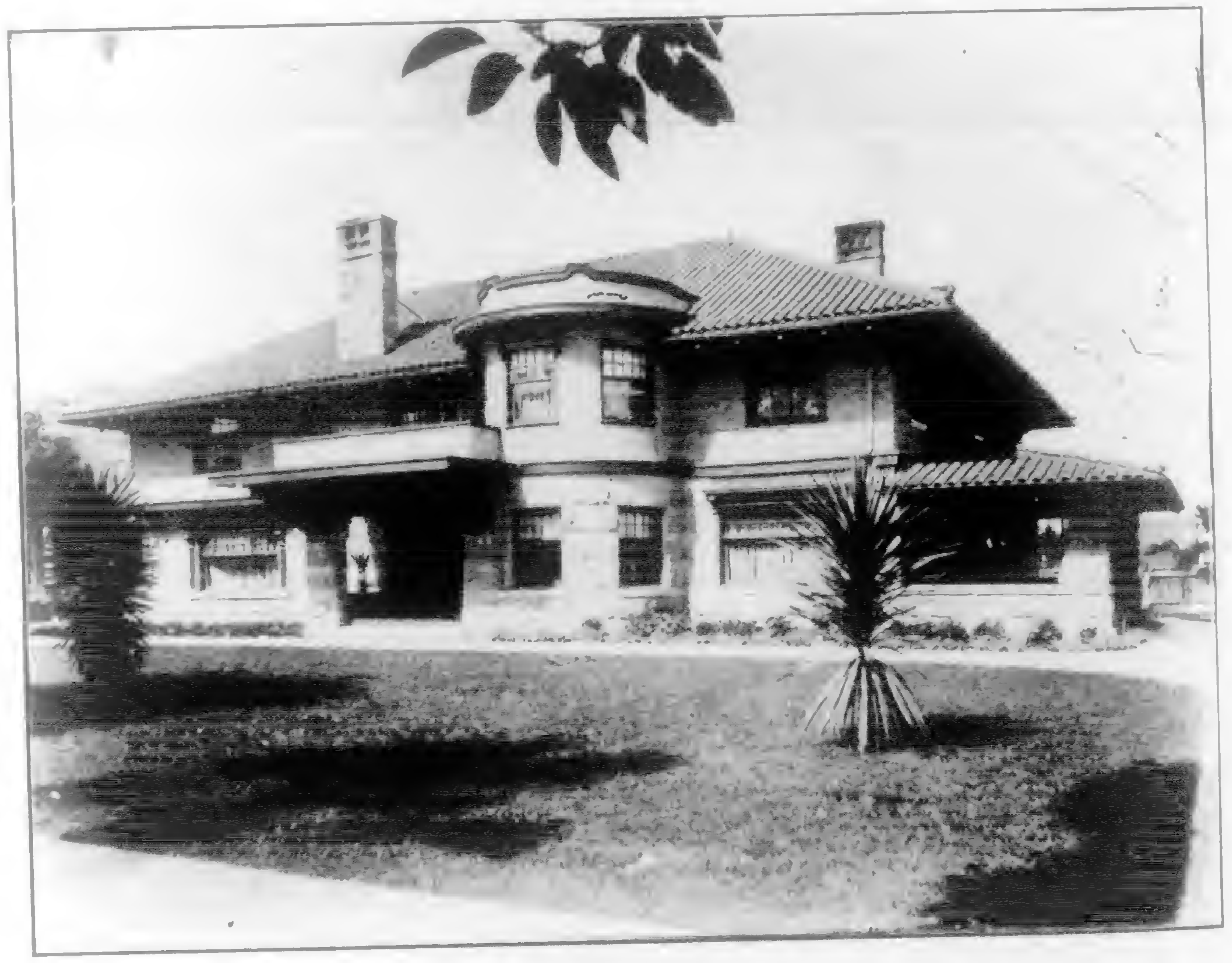
Residence of Mr. C. F. Perry, Los Angeles
Hunt and Eager, Architects



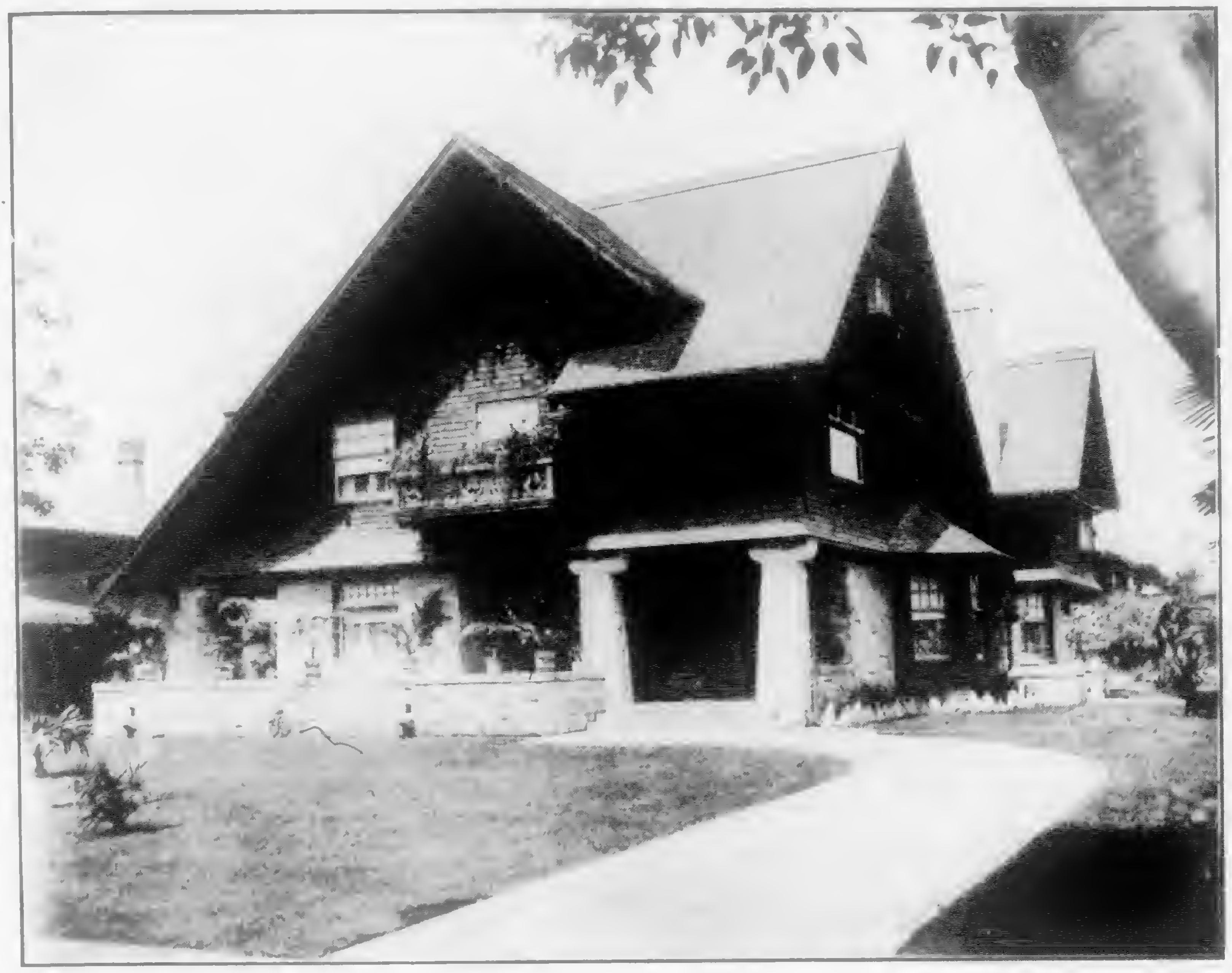
Residence of Mr. H. Beville, Hollywood
Hunt and Eager, Architects



Residence of Mr. F. I. Stanton, Los Angeles
Hunt and Eager, Architects



Residence of Mrs. Lee Foster, Los Angeles
Hunt and Eager, Architects



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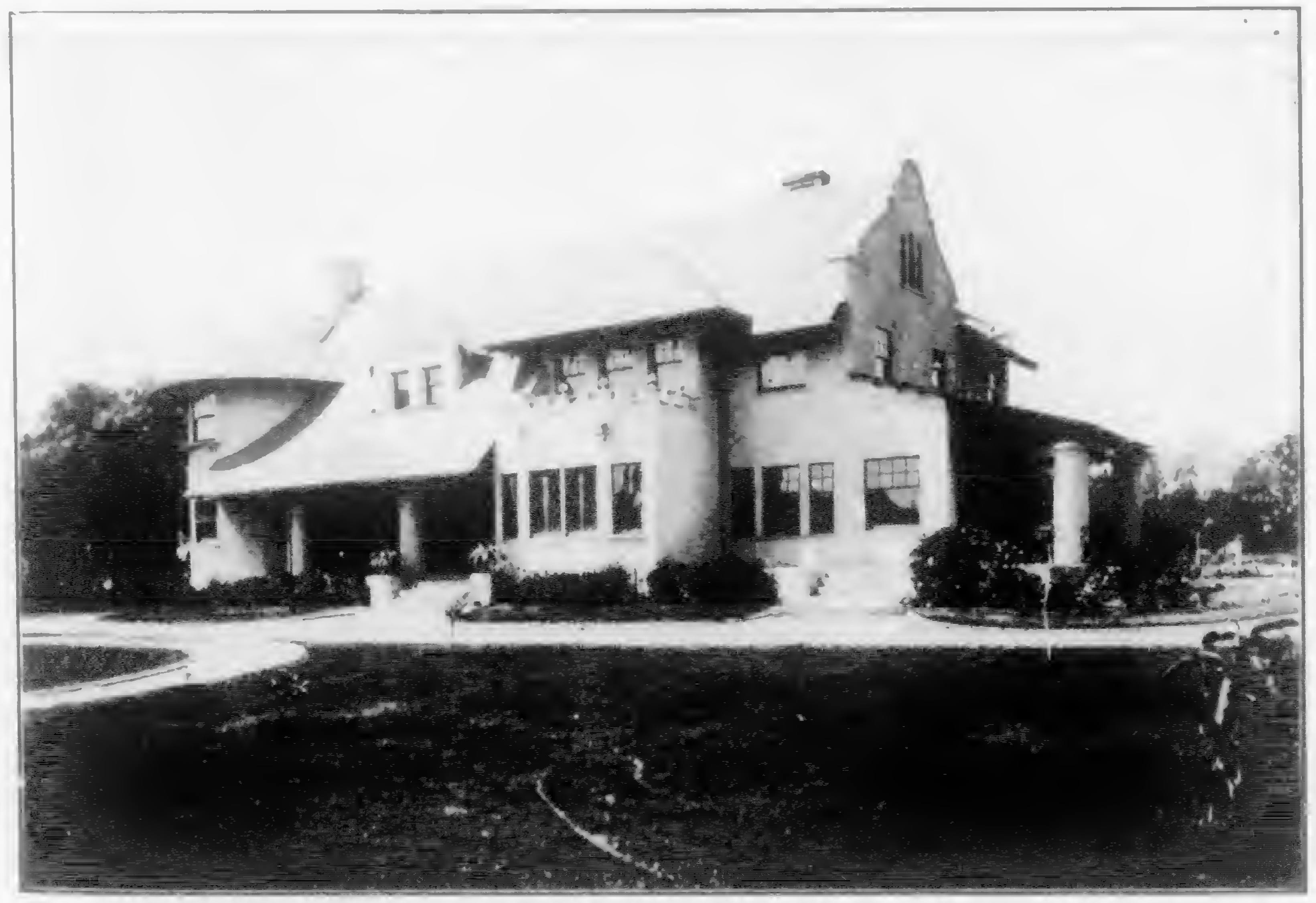
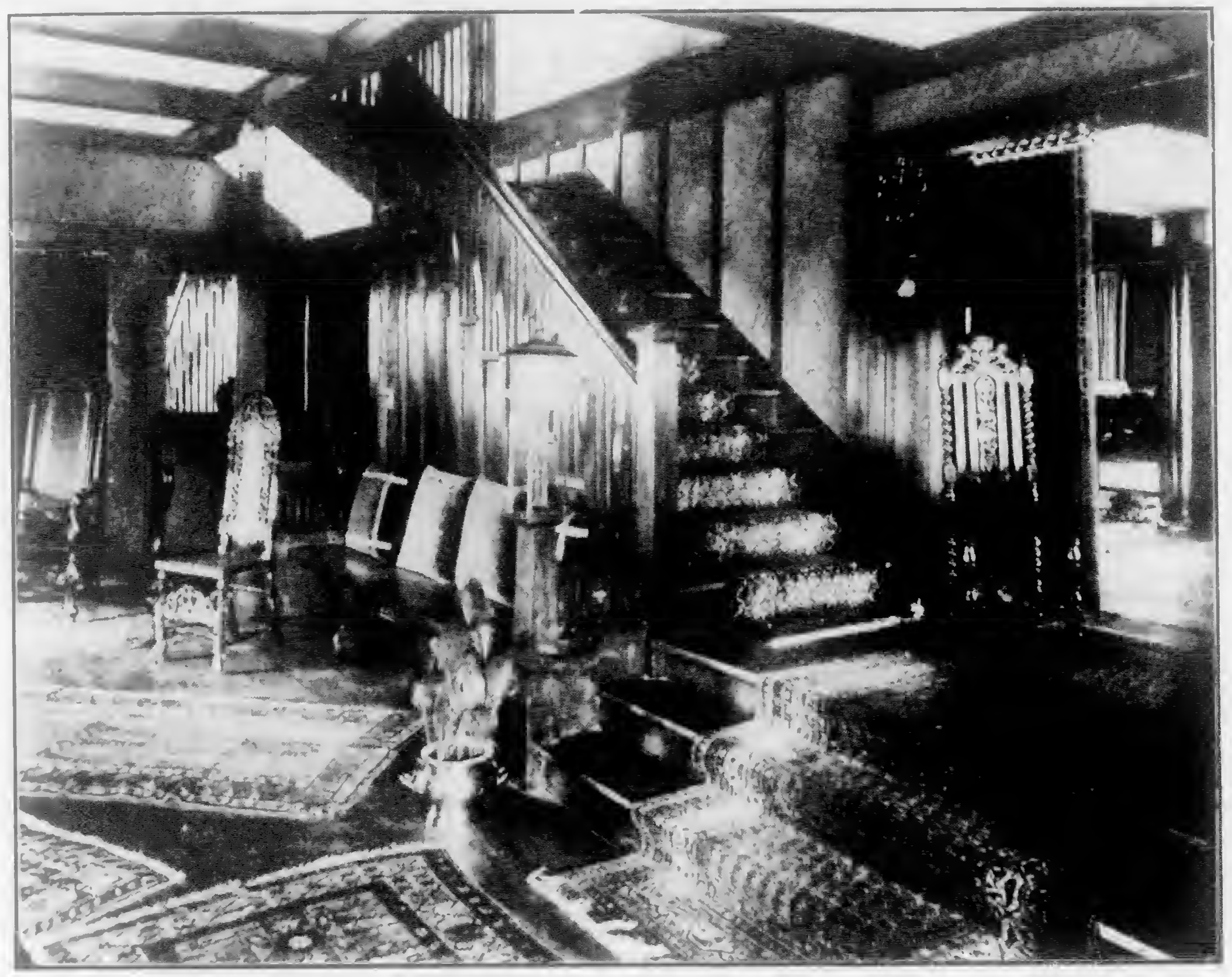


Residence of Mr. H. Beville, Hollywood
Hunt and Eager, Architects

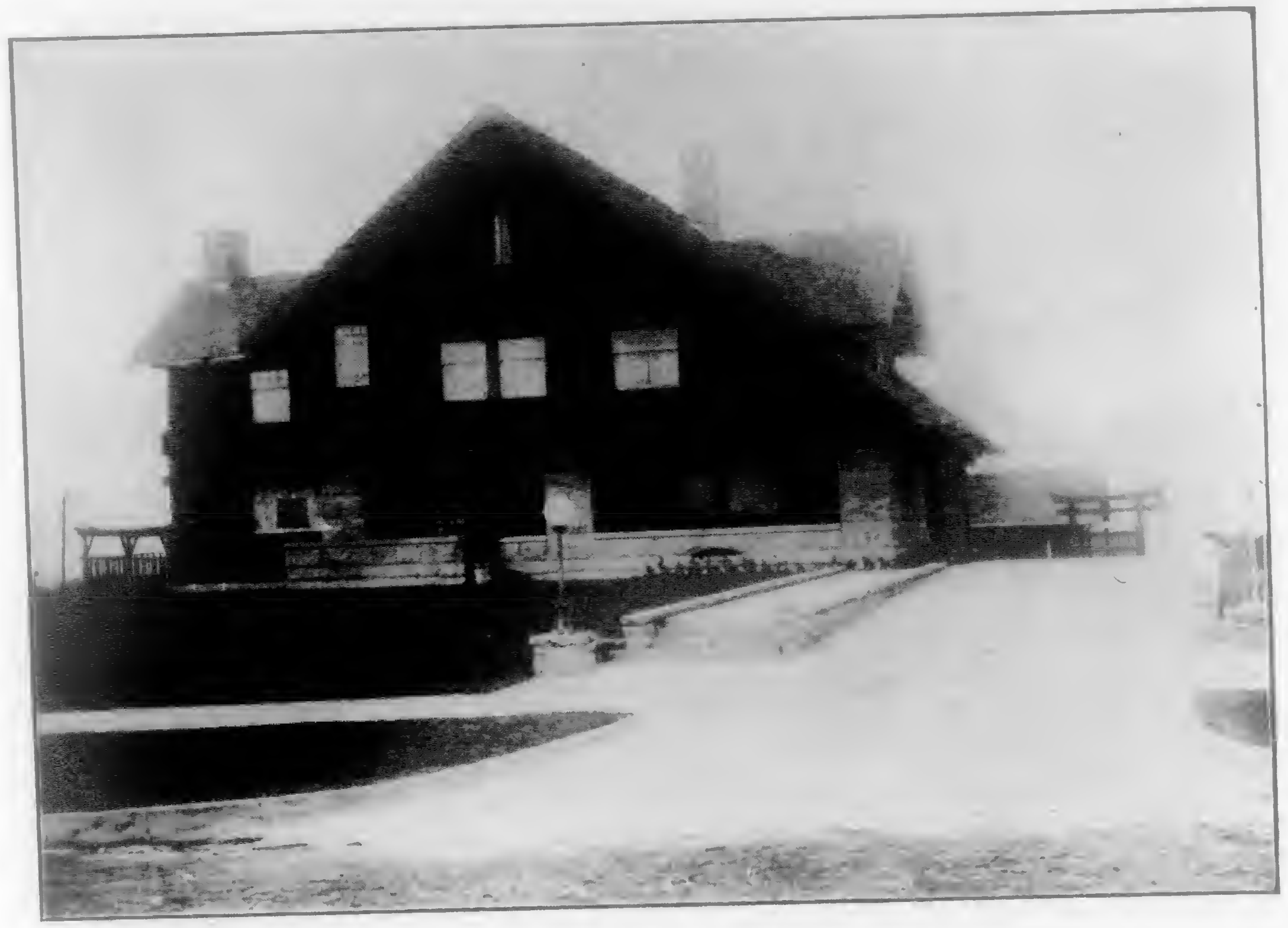
Residence of Mr. Geo. W. Dickinson, Los Angeles
Hunt and Eager Architects

Garage of Mr. Geo. W. Dickinson, Los Angeles

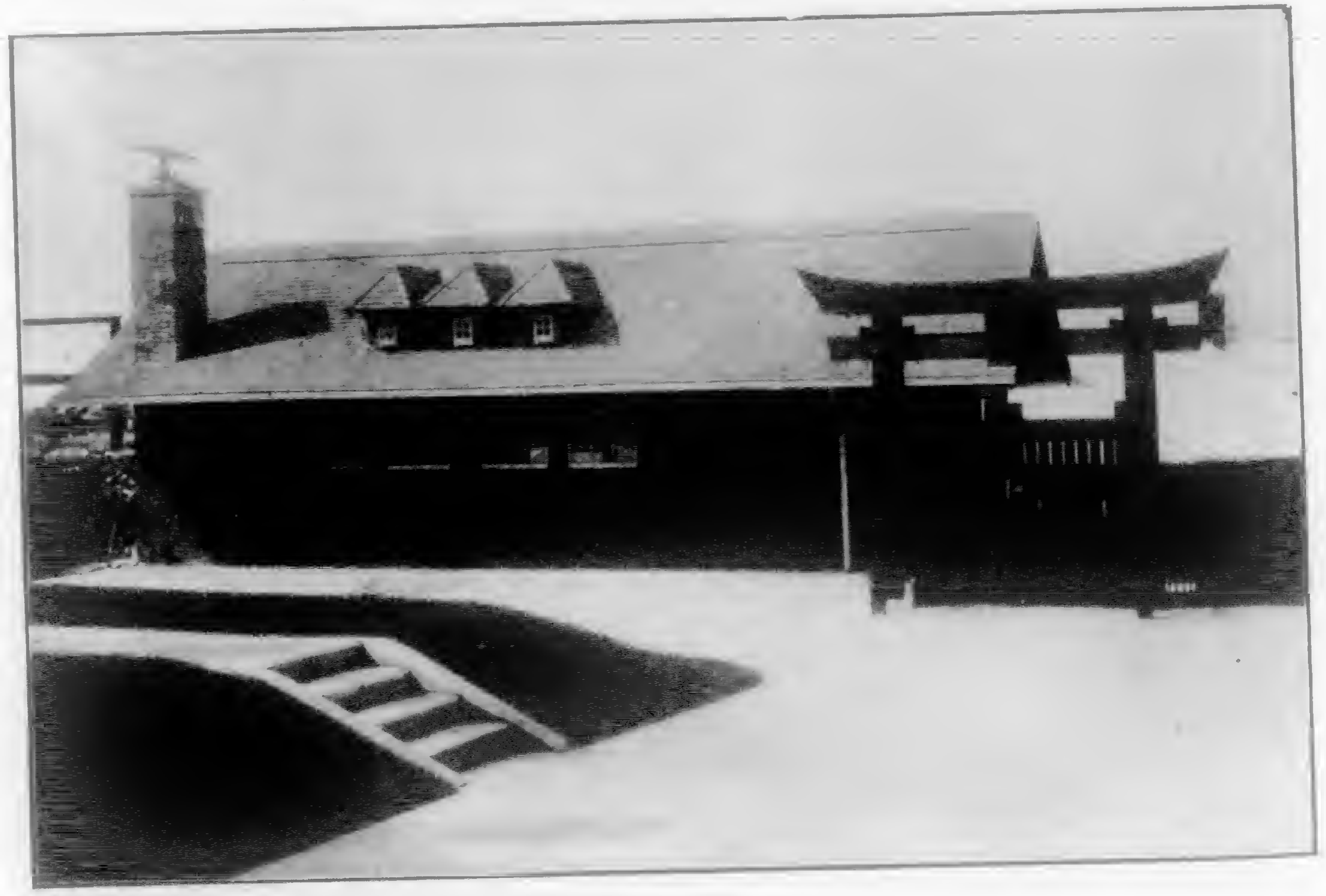


Stair Hall in Residence of Mr. Geo. W. Dickinson

Ebell Club Building, Los Angeles
Hunt and Eager Architects



Residence of Mr. Geo. W. Dickinson, Los Angeles
Hunt and Eager, Architects



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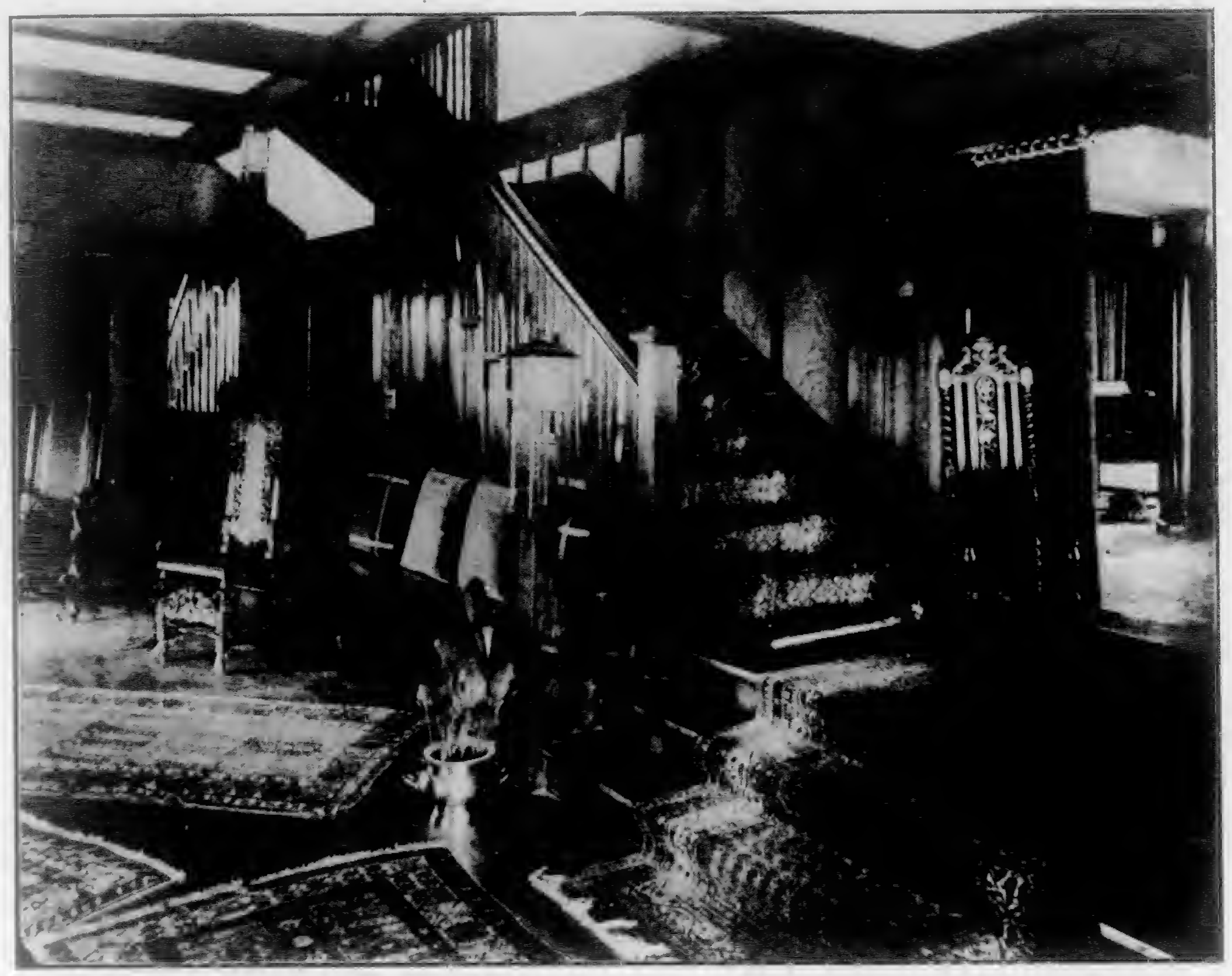
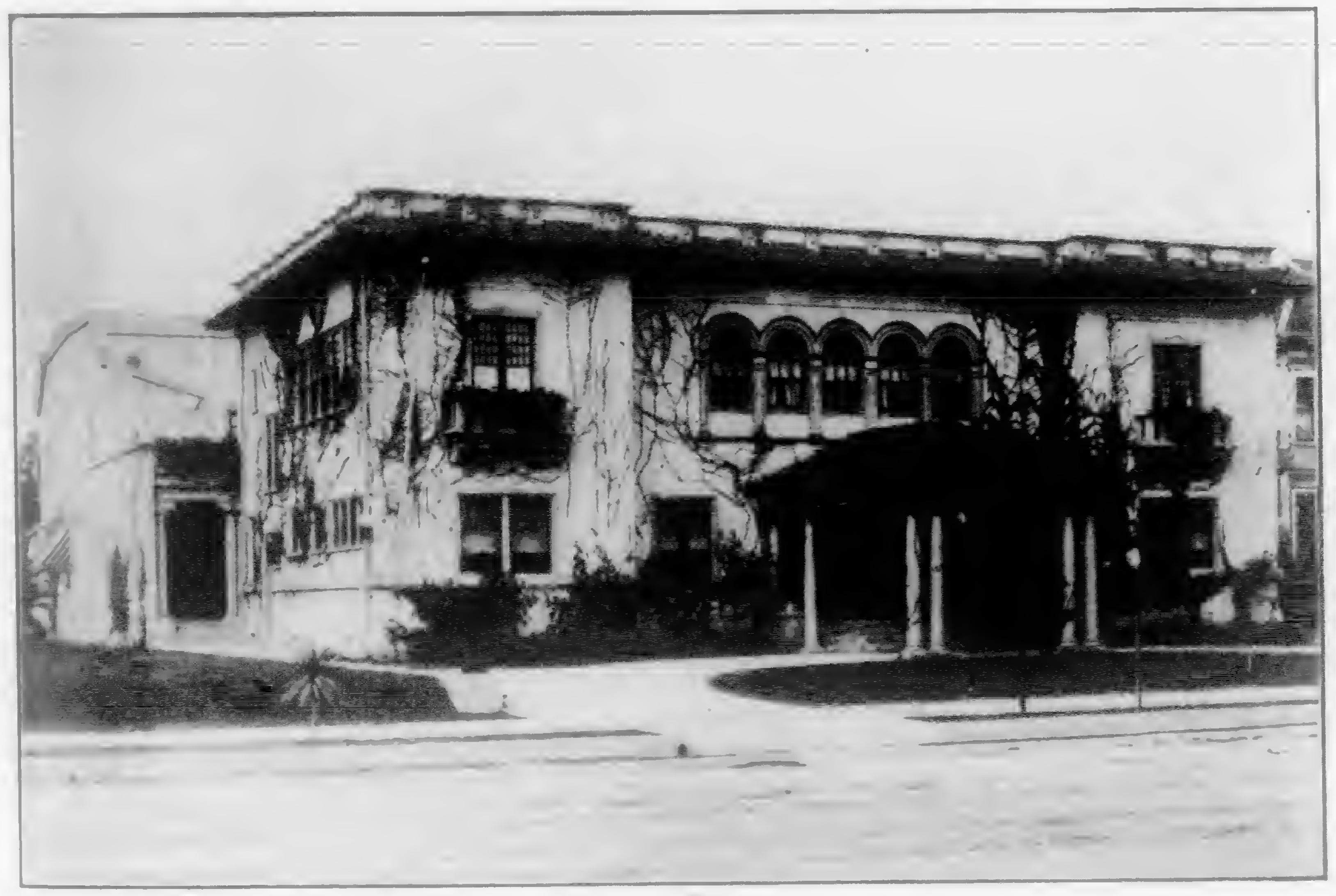
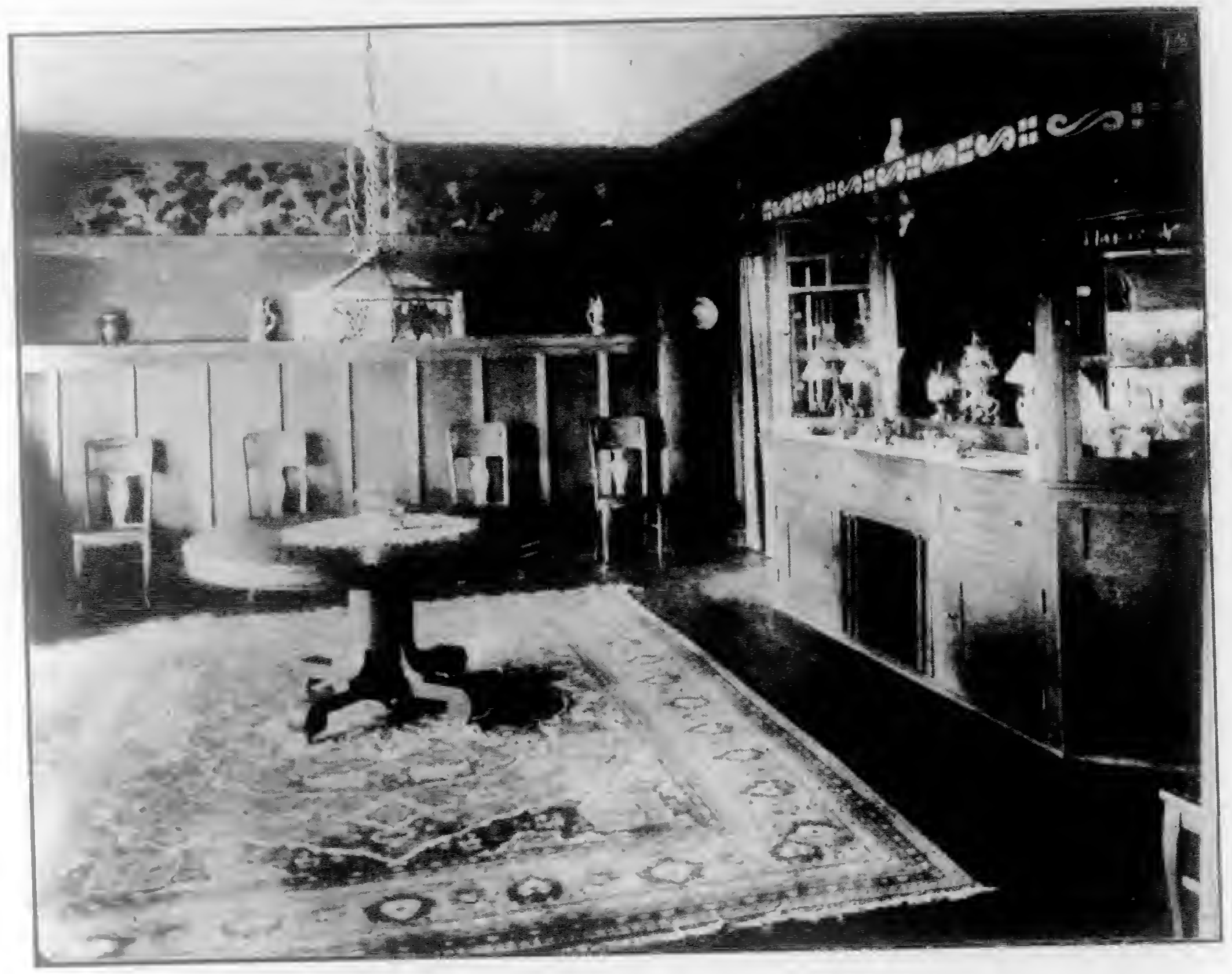


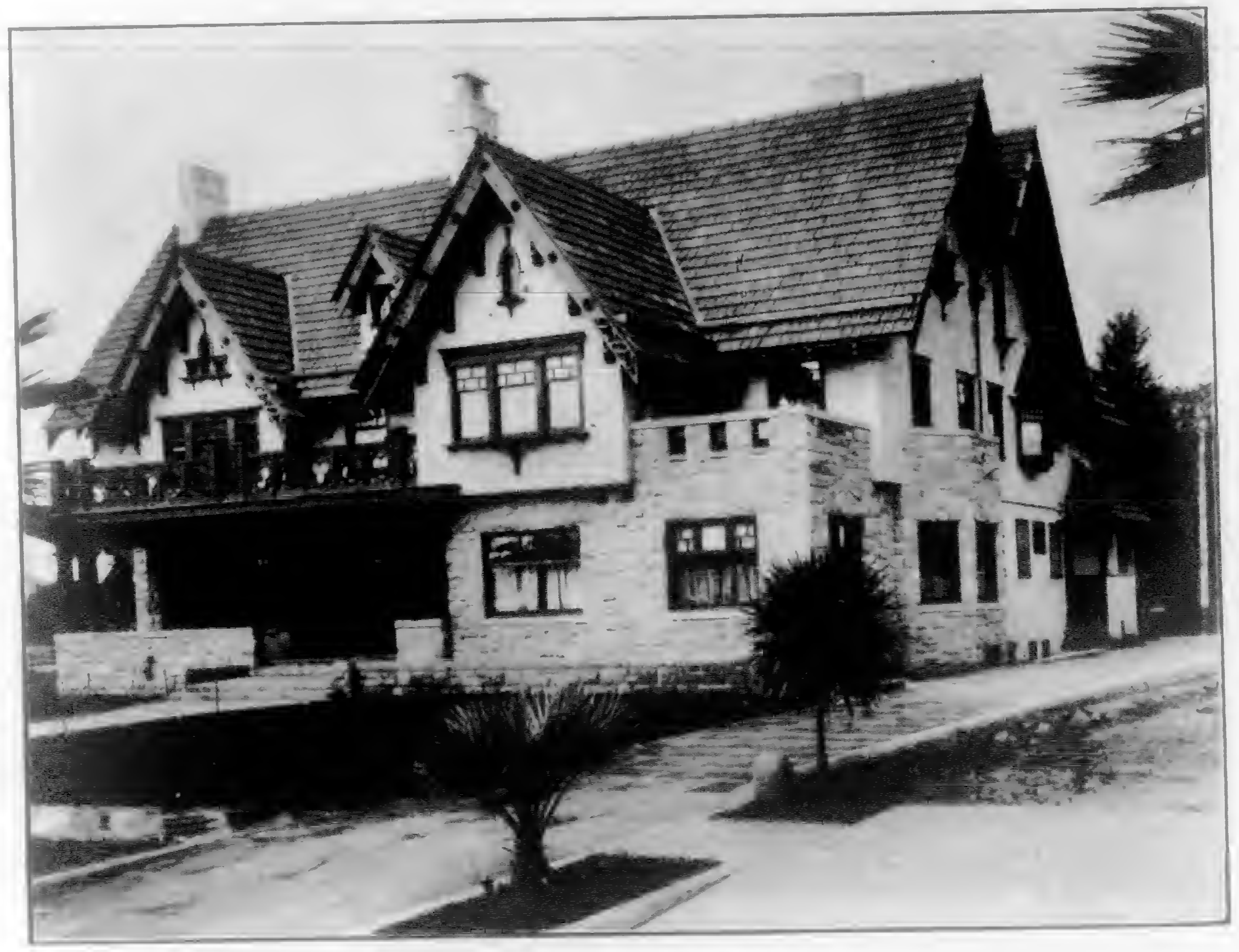
Stair Hall in Residence of Mr. Geo. W. Dickinson



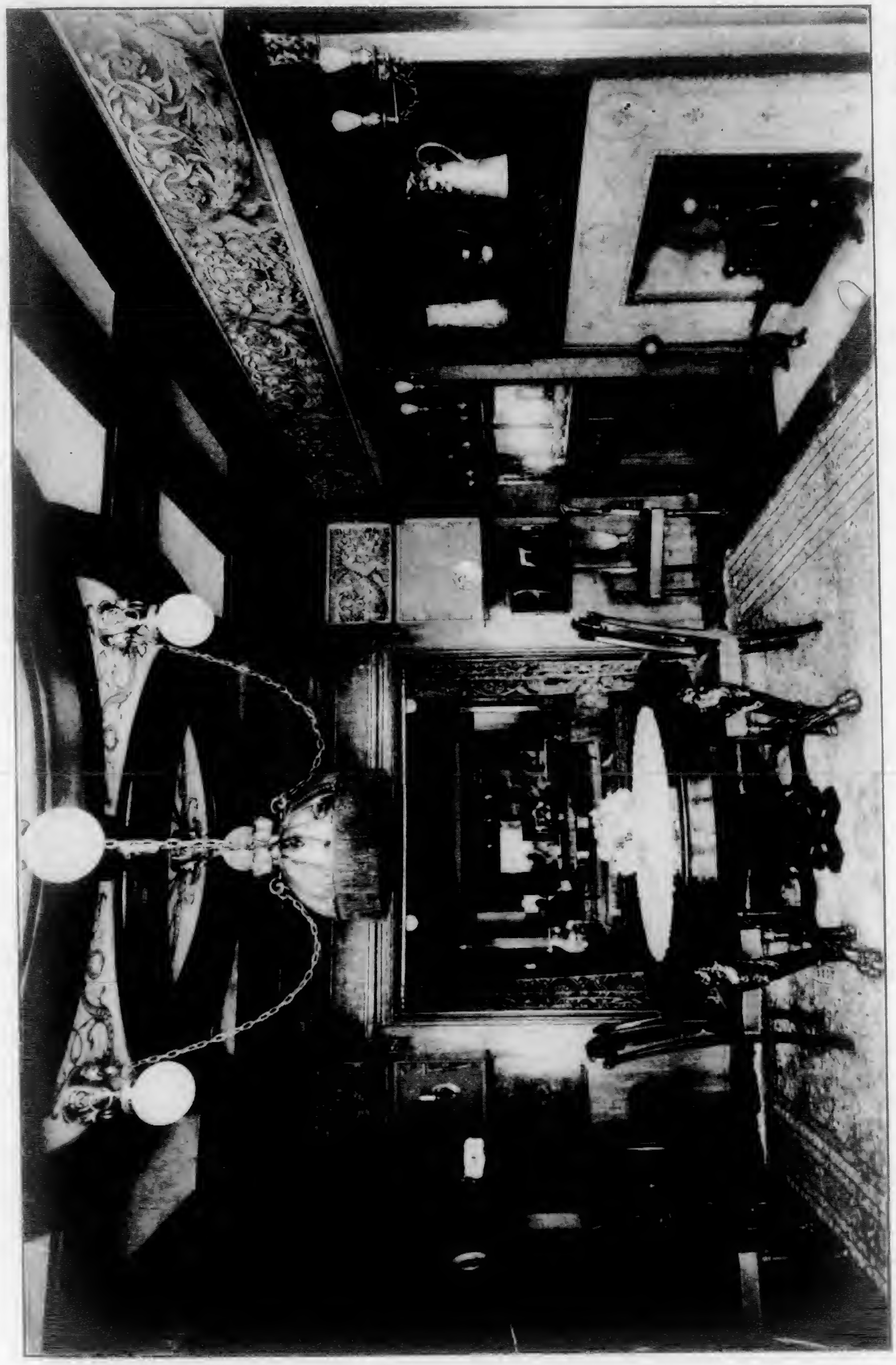
Ebell Club Building, Los Angeles
Hunt and Eager, Architects



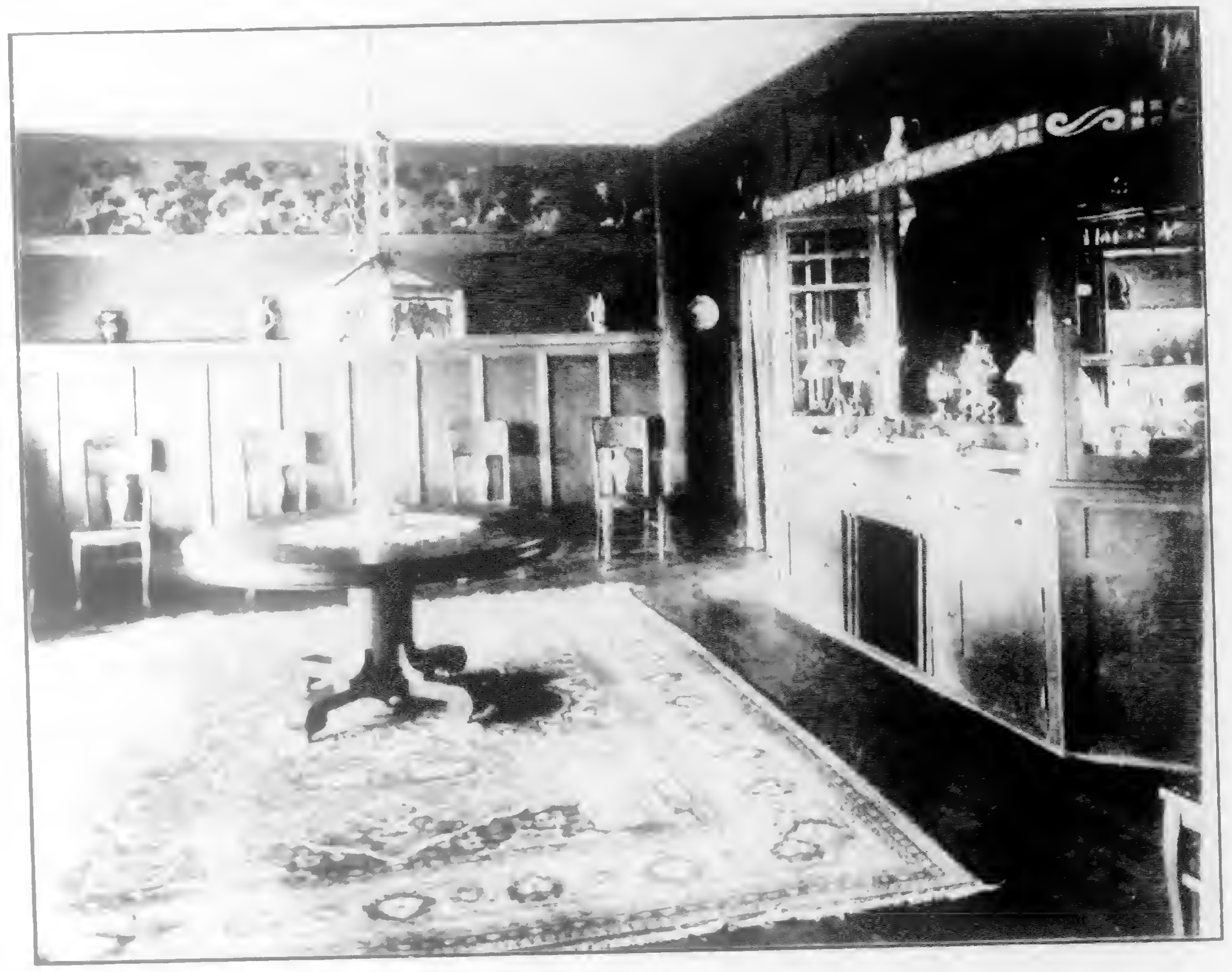
Dining Room in Residence of Mr. Geo. W. Dickinson



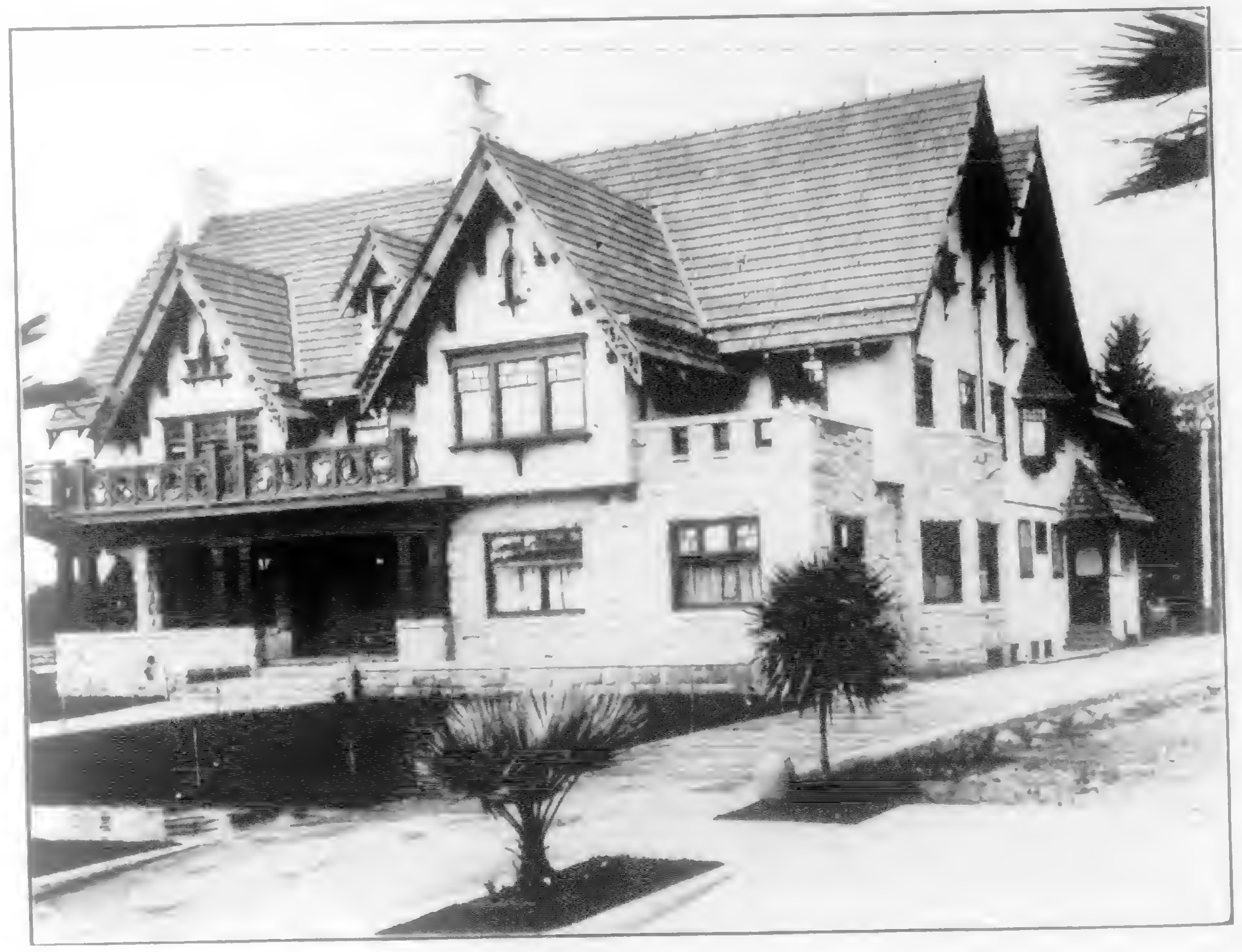
Residence of Mrs. Vermillion, Los Angeles
Hunt and Eager, Architects



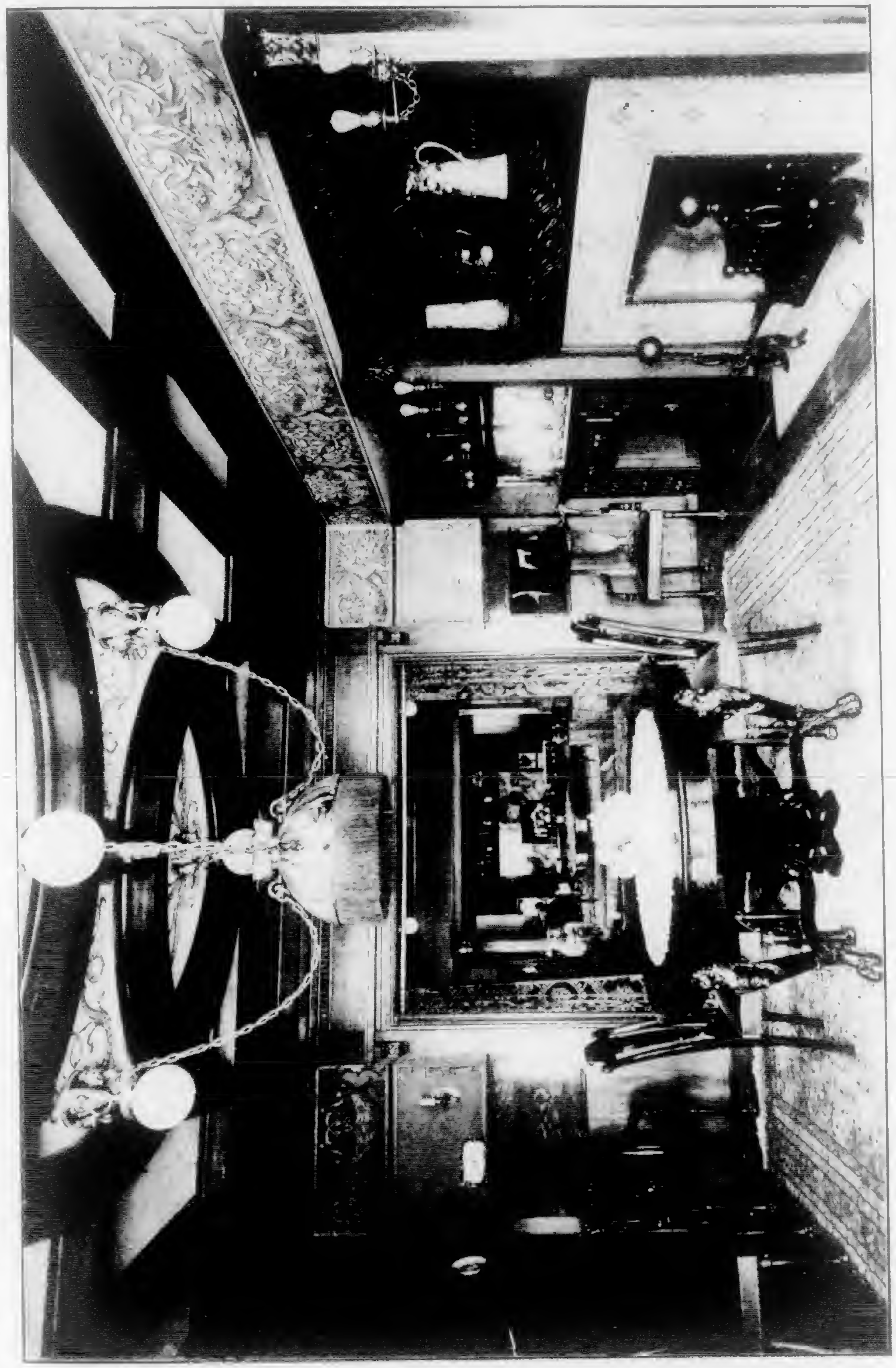
Dining Room in Residence of Mrs. Vermillion, Los Angeles
Hunt and Eager, Architects



Dining Room in Residence of Mr. Geo. W. Dickinson



Residence of Mrs. Vermillion, Los Angeles
Hunt and Eager, Architects



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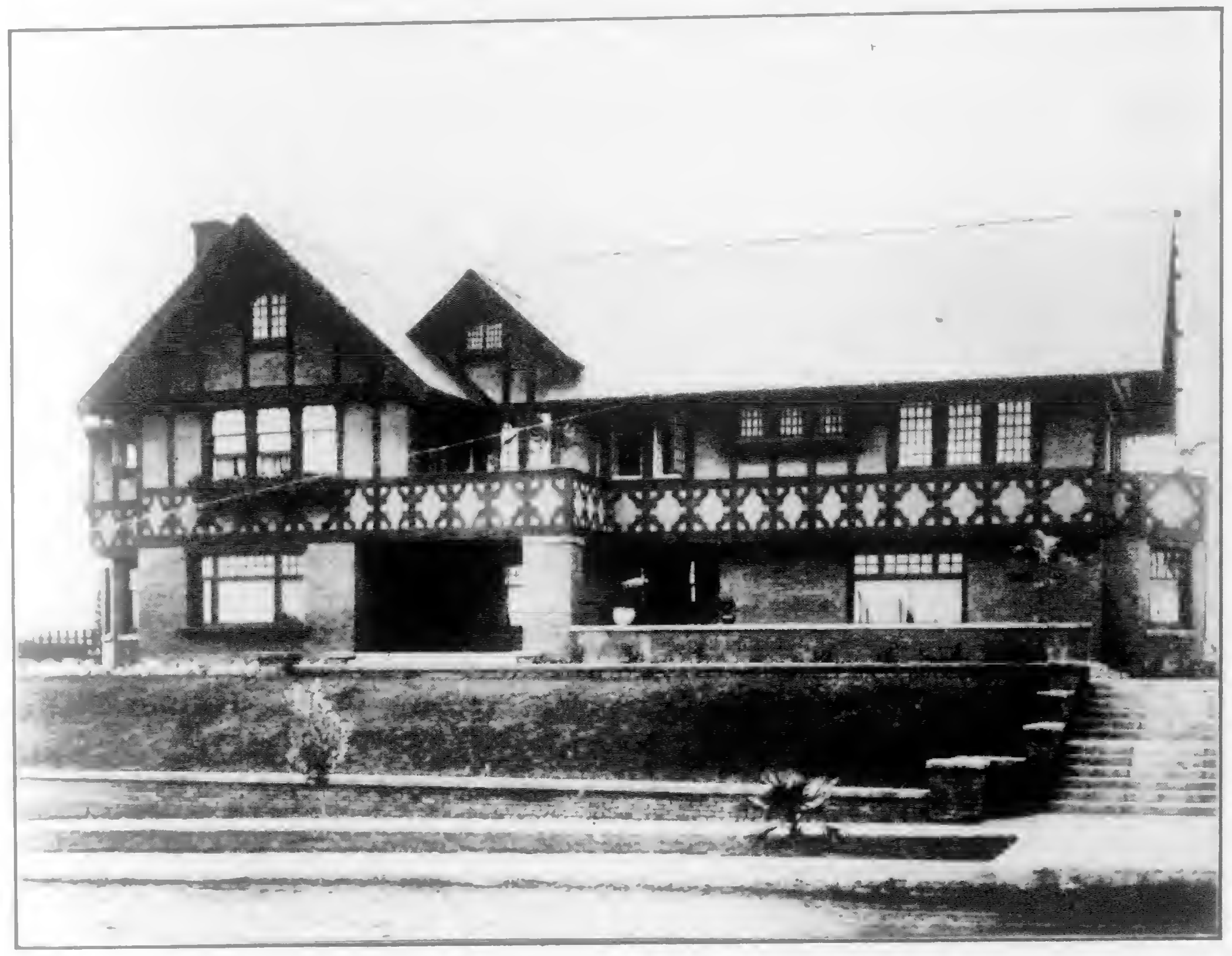
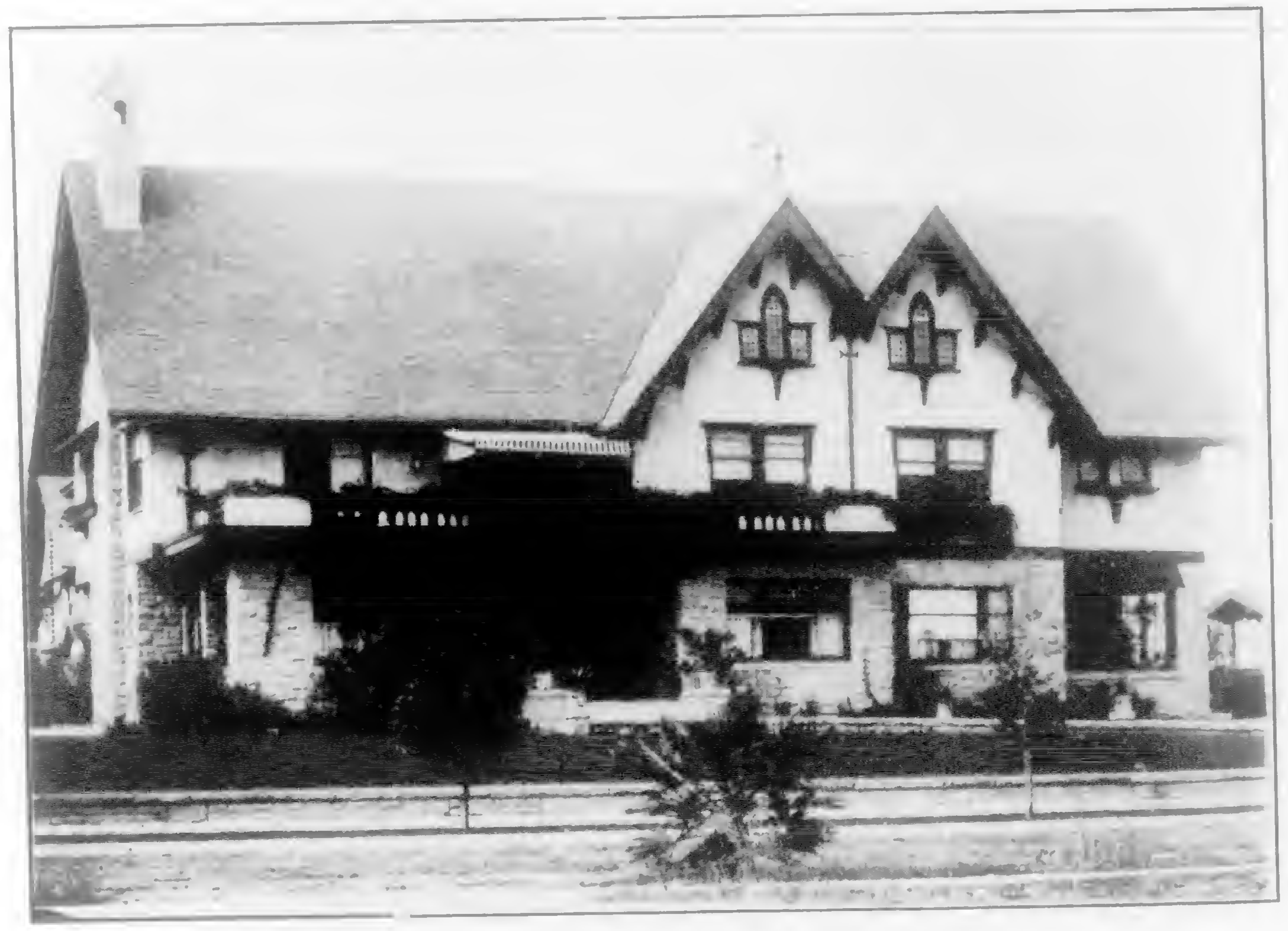
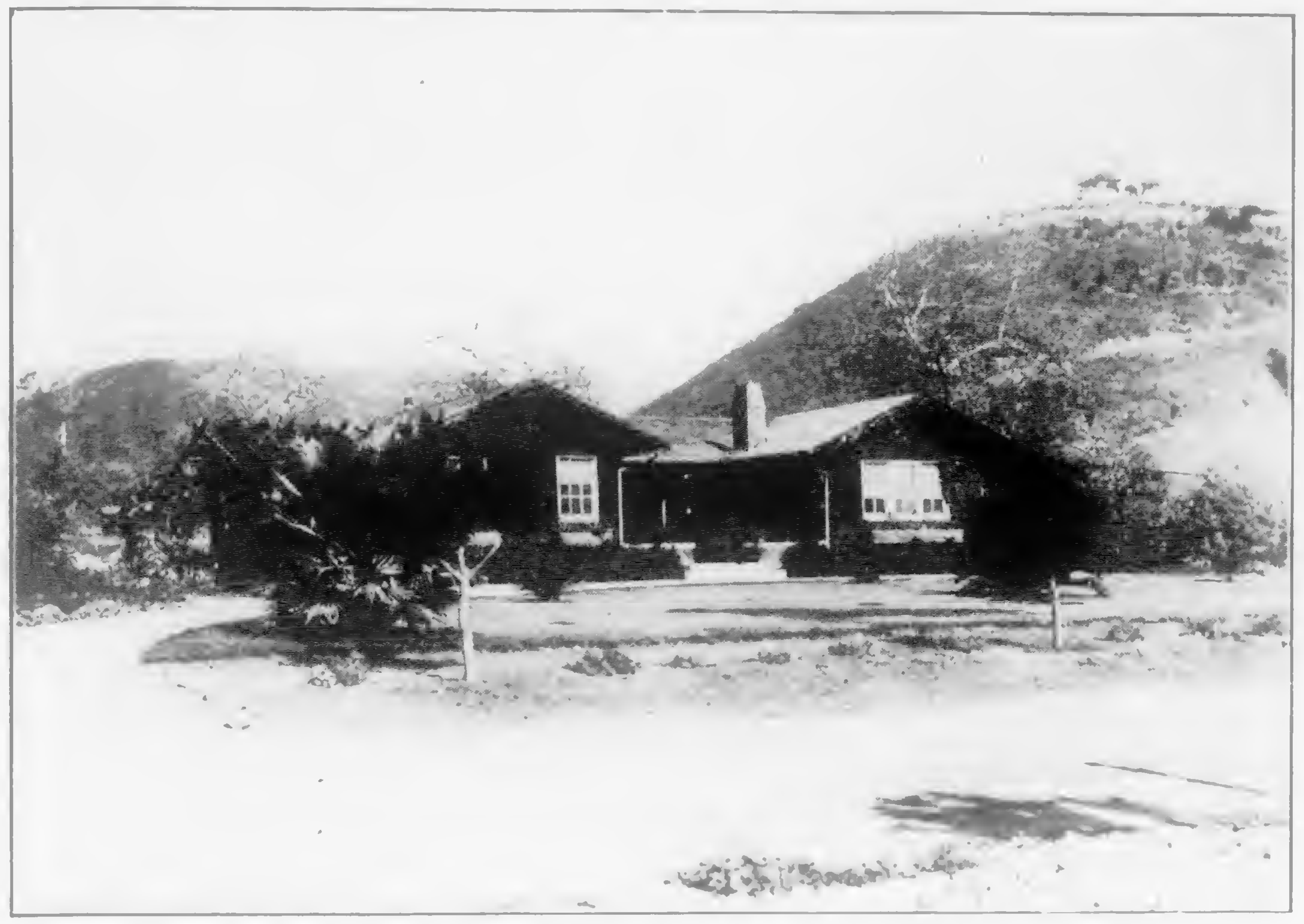


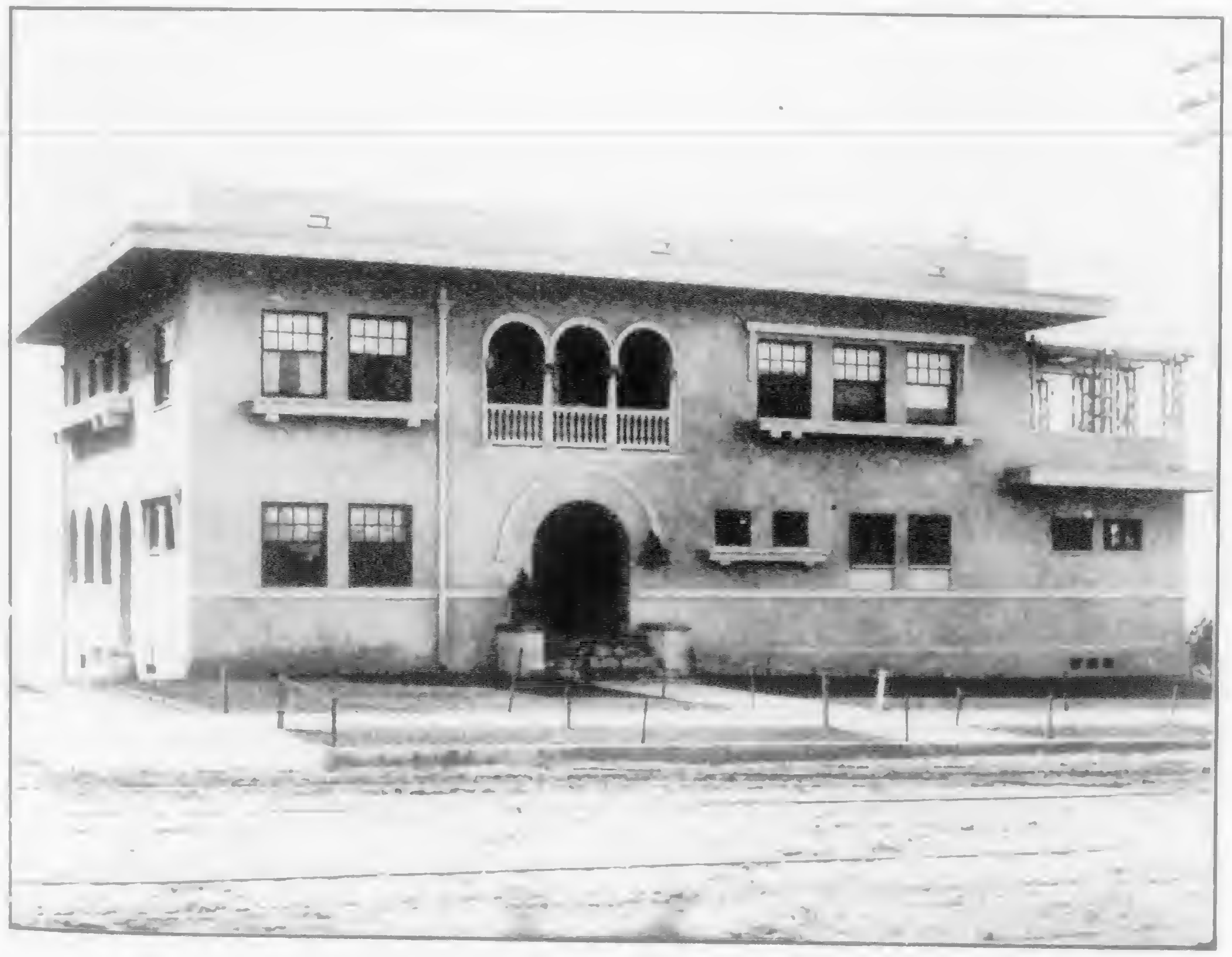
Residence of Mr. William Lacy, Los Angeles
Hunt and Eager, Architects



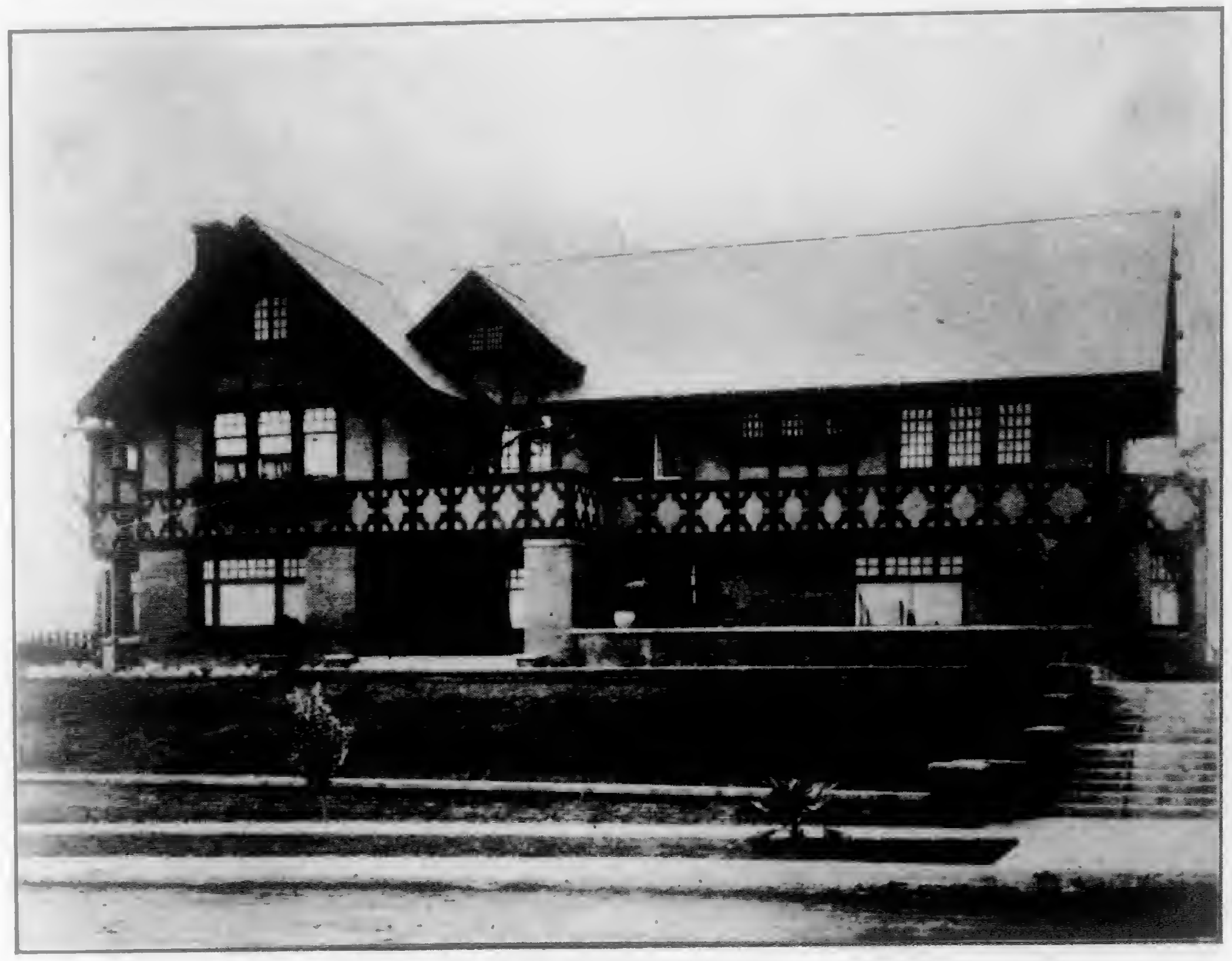
Residence of Mr. Maurice Hellman, Los Angeles
Hunt and Eager, Architects



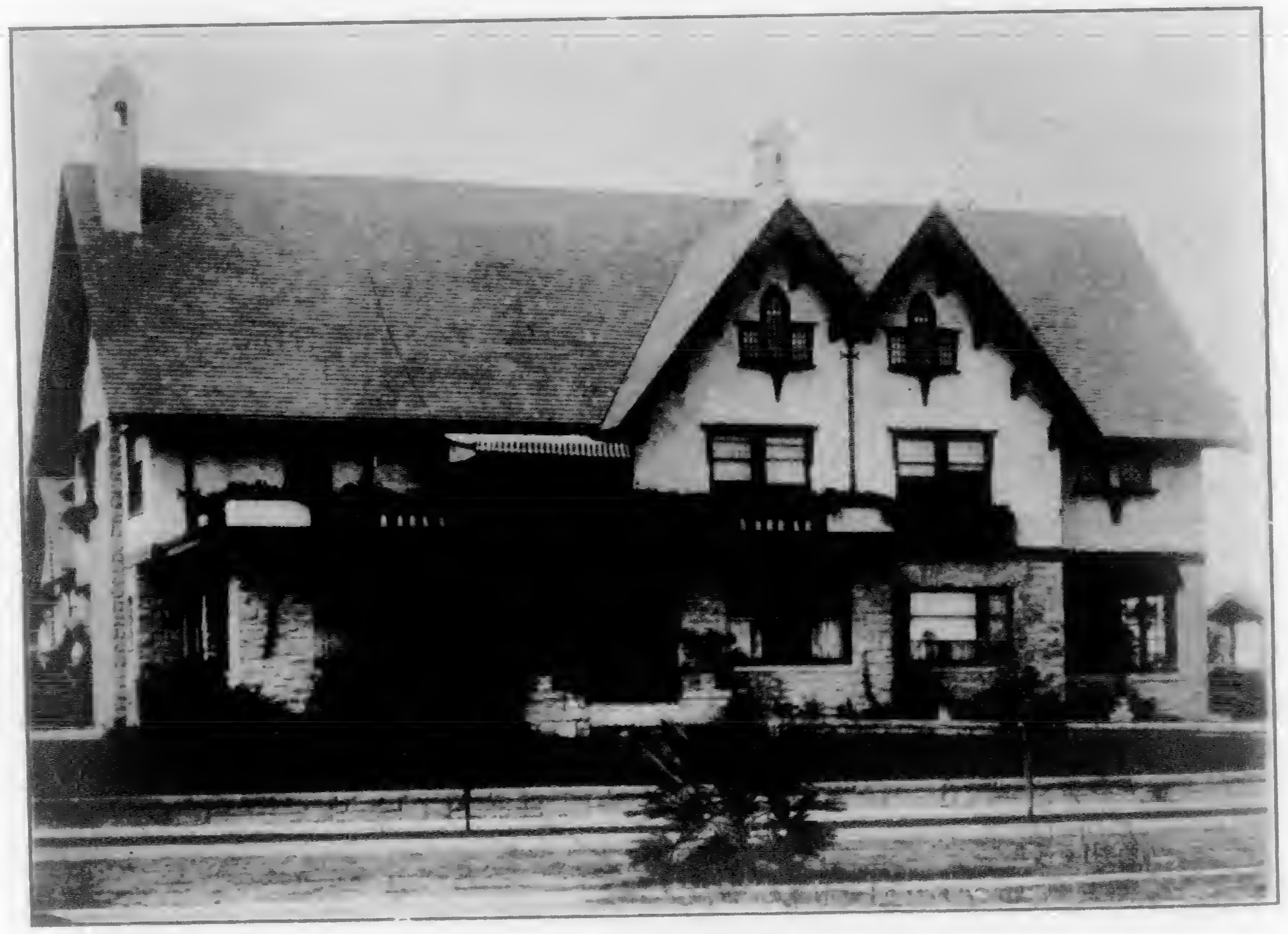
The Pollock Bungalow, Hollywood
Hunt and Eager, Architects



Residence of Dr. Wing, Los Angeles
Hunt and Eager, Architects



Residence of Mr. William Lacy, Los Angeles
Hunt and Eager, Architects



Residence of Mr. Maurice Hellman, Los Angeles
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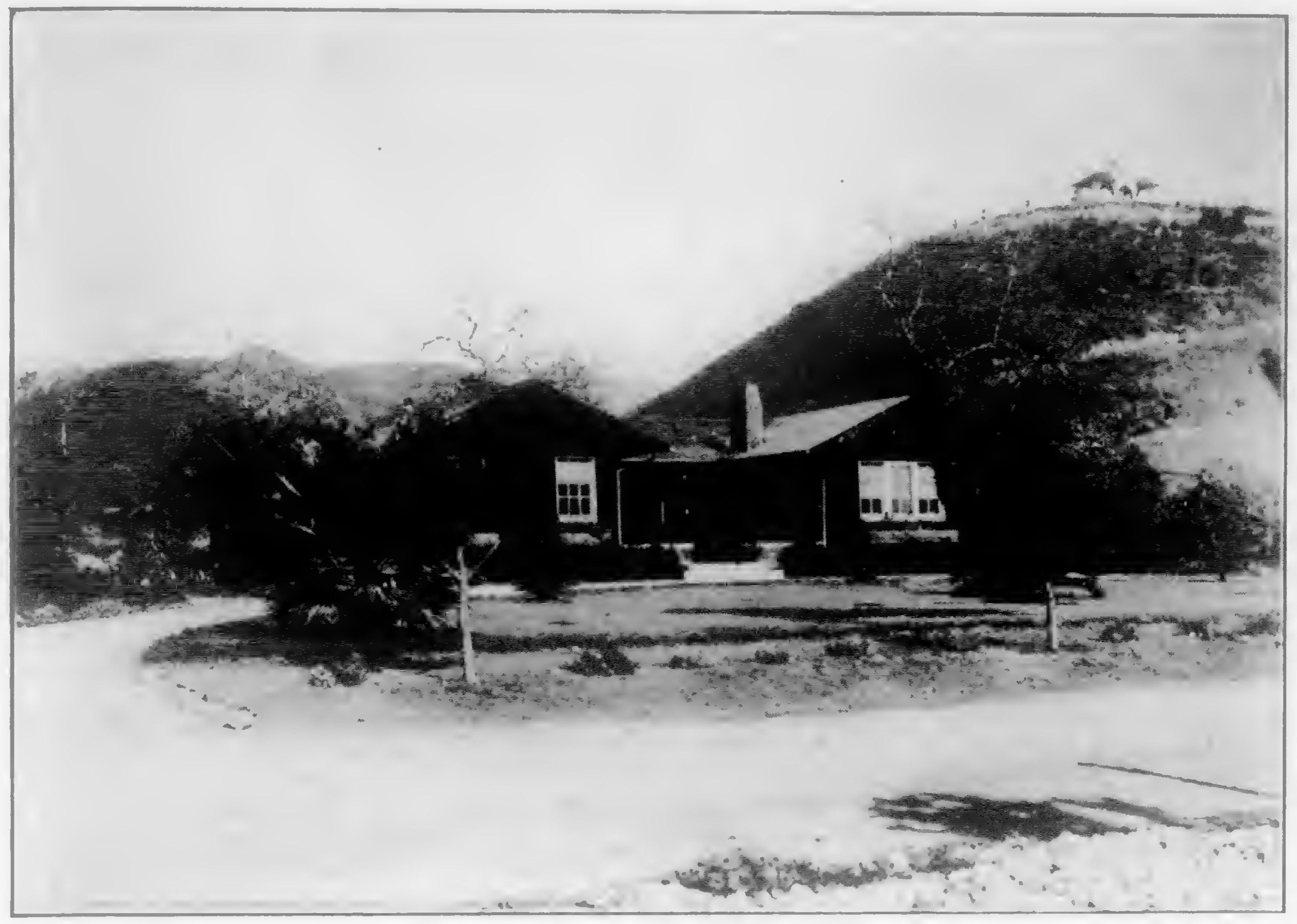

The Pollock Bungalow, Hollywood
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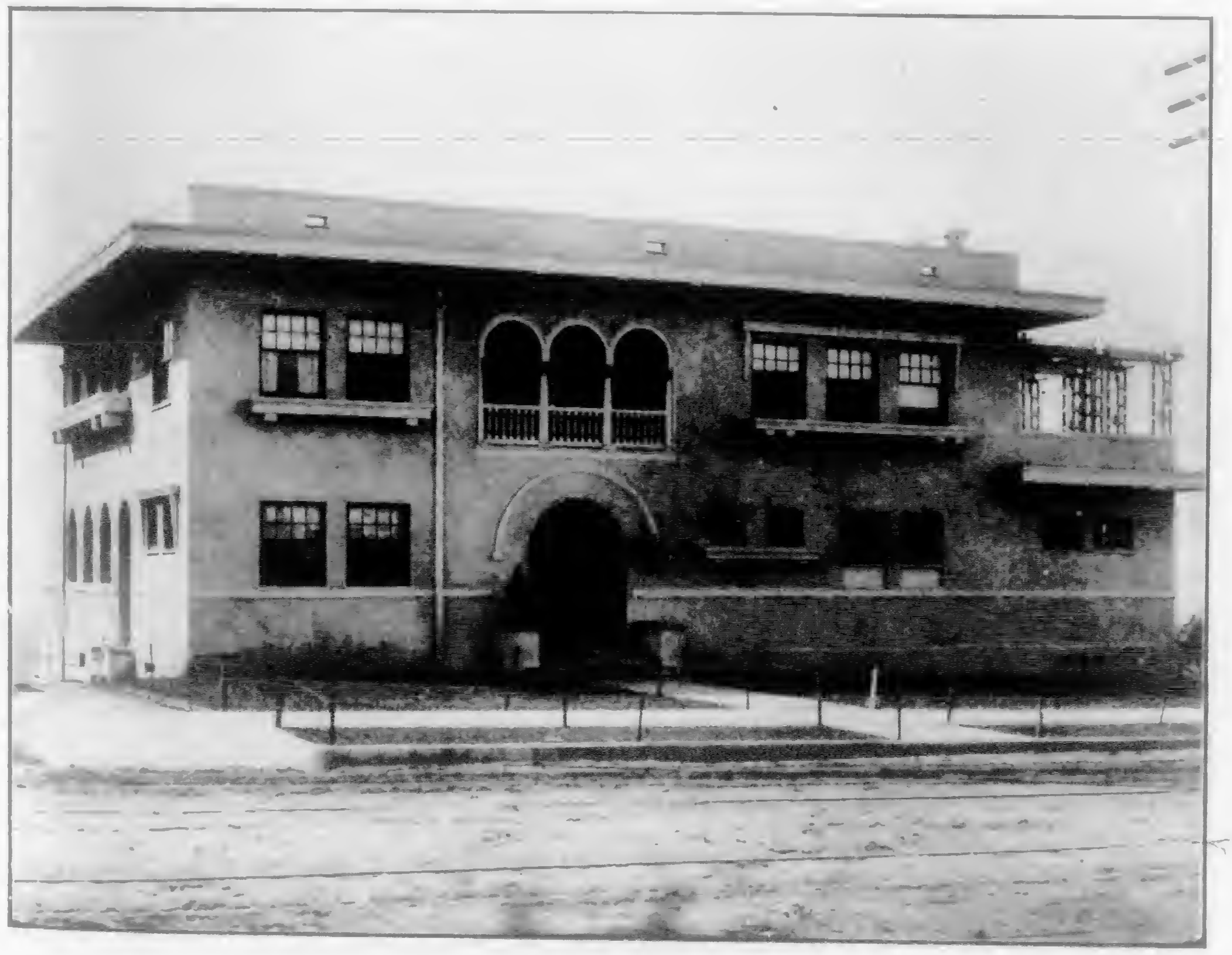

Residence of Dr. Wing, Los Angeles
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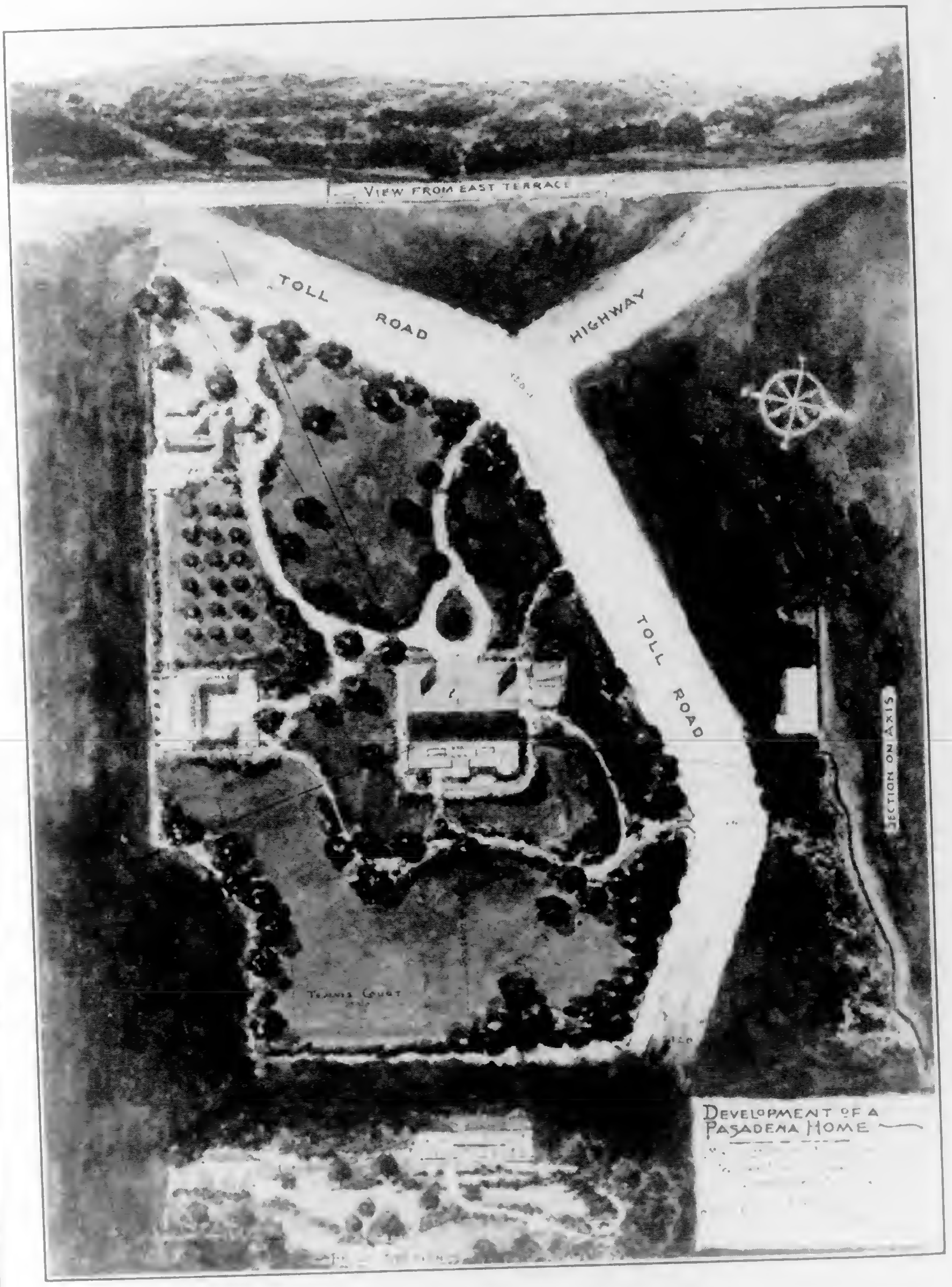


Landscape Features of the Estate of C. W. Leffingwell
Wilbur David Cook, Landscape Architect
Hunt and Eager, Architects

Landscape Features of the C. W. Leffingwell Estate

By WILBUR DAVID COOK, Landscape Architect.

C. W. Leffingwell purchased a home site in Pasadena, had it surveyed, secured his architect, had sketch plans prepared for the house and then called in the landscape architect, and the plan which accompanies this article is the result of many a hard fought consultation.

To illustrate, one of the numerous bones of contention was the proper location for the approach drive. At first glance it would appear that the lower right hand corner of the estate was the proper place of entrance. It was conveniently accessible from town and reasonably direct, it was found, however on studying into the matter that it would necessitate a ten per cent grade for almost the entire distance entailing a very heavy cut at a point opposite the upper left hand corner of the house; and greatly mar the beauty of a small natural valley at this point. The temptation for service vehicles of all kinds to enter here would prove almost irresistible, necessitating either a gate or gate lodge. Another point which had to be considered was the existing County Road (The Toll Road) which was already available and at about the same grade as any approach drive which we would have to construct.

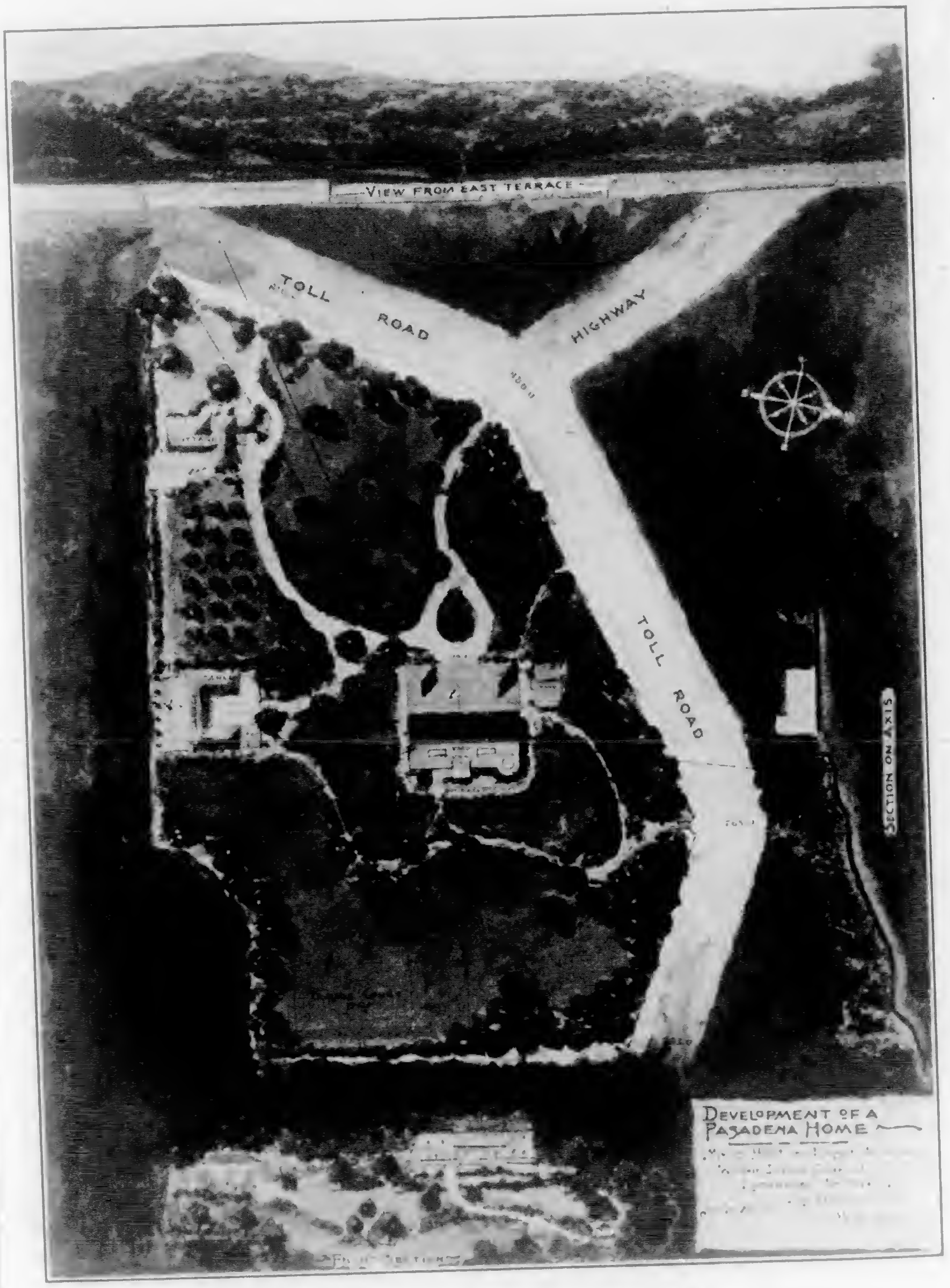
It was finally decided to take advantage of this existing road and enter as shown on plan. In this way we secured an approach drive of less than four per cent and with very little cut or fill. Another point which had to be considered was the handling of the surface water from the next estate just south of us. It was therefore thought best to provide the driveway leading by the cottage. This enabled us to drive the watershed carrying a portion of the water along this driveway in cobblestone gutters to the Toll Road, and a portion toward the garage where it was caught by a catch basin emptying into a six-inch vitrified pipe thence underground to the eastern boundary of the property where it empties into the highway gutter.

The first floor elevation of the house was established at El. 807.00 necessitating but two risers from the approach drive giving us a terrace on the east front of about ten feet in height. The house is provided with an extensive terrace on the east and is crowned by a tower commanding a fine outlook over the adjoining country and is so located that the tower rises from the apex of the convex slope and will look as though it had grown there.

An artistic gate entrance is to be erected at the first angle in wall on the Toll Road, semi-circular in plan to save a thrifty live oak which is growing at this point. Entering at this gateway one climbs a short flight of steps following the walk past its intersection with the by-path to the next short flight passing at this point by a small pergola and rising with the natural contour of the hill and by taking the lead to the right one is led to another short flight which lands you at the foot of the terrace steps. Considering the elevation which had to be overcome (some sixty-four feet) as few steps were used as possible and the grade of this walk did not exceed seven per cent.

This walk also leads to the garage as shown on plan, a side branch passes under the garage yard through a tunnel into the basement and through to the paddock at the rear. This connection being provided for the gardener's convenience.

The garage is located on a side-hill slope a half cut half fill proposition and is supported by retaining walls above and below. The floor



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The garage is located on a side-hill slope a half cut half fill proposition and is supported by retaining walls above and below. The floor elevation was established almost ten feet below the first floor elevation of the house to make this building inconspicuous and as much below the line of view as possible, and when the screening plantations are in place a fleeting view only can be obtained. The driveway from the front door to the garage yard is on a five per cent grade and the turn to the right leading to the cottage is on a seven per cent grade for a short distance.

* * *

"Keep Cool"

A GREAT deal of talk is heard these days about confiscatory methods, endangered prosperity and threatened financial disaster.

"Keep Cool," says Secretary Shaw.

Chancellor Day, of Syracuse University, is distressed over "the use of the court and the prosecuting machinery of the country to direct the frenzy created by a long and persistent yellow appeal of demagogism," and Leslie's Weekly expects the time to come when the people will "look back upon this time of frenzied politics (?) with amazement and indignation."

Yet even Secretary Shaw says "Keep Cool."

"Our farms produce $6,500,000,000 per annum," he says. "Our mines yield more than $1,500,000,000. Our forests yield more than $1,000,000,000. These are not exhausted. Our factories yield $12,000,000,000. Our railways earn more than $2,000,000,000.

"The real sources of the people's wealth have not been affected."

"There are no logical reasons for serious conditions," he goes on. "The people will have exactly what they expect."

What do the people expect—not the masses nor the classes, but the people—what do they expect?

They expect prosperity. They expect honest prosperity, where a dollar is worth a dollar, no more and no less.

And that is exactly what they will get.

Some one asked Secretary Bonaparte if he thought that the great corporations of the country were generally conducted on such unlawful principles that the prosecutions deemed necessary by the government would unsettle industrial conditions and lessen our prosperity?

He replied emphatically, "No."

"The vindication of the law," he said, "can in my opinion have only a beneficial effect on the prosperity of the country, although it may demoralize some speculators."

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More Severe Criticism of Granite and Sandstone

(From Brickbuilder)

There is a common conception that granite is one of the most enduring stones, but it is certainly not so in our climate. * * * A granite quarry may have good stone in some portions of the deposit and be utterly worthless in others, and as a general rule it is not safe to use a granite unless the architect knows absolutely its composition and the part of the quarry from which it is taken.

Sandstones, which were formerly so much used in the East, are really the poorest building material in the market. The cementing material in sandstone has a very slight value, and it is probably the poorest material extensively used, so far as resisting the action of frost is concerned, while the presence of iron constitutes an almost fatal defect. It may be said also that very little sandstone is free from iron.

Can Earthquake-Proof Buildings be Erected*

By L. J. MENSCH, C. E.

THE subject of earthquake proof buildings is a vital one for San Francisco and surrounding counties. It is, of course, possible to build earthquake proof buildings of brick, stone and wood.

I dare say that the great majority of well-built buildings of San Francisco stood the earthquake remarkably well, provided that they were not built on what you may call stilts, and where they were properly braced and tied together, nothwithstanding the contrary reports spread all over the country.

I wish to impress upon you tonight the fact that reinforced concrete is the best material adapted to buildings which may have to withstand earthquake shocks, and that we can build an absolutely quakeproof reinforced concrete building at a considerably lower cost than the ordinary steel building whose quakeproof qualities are only problematic. You all know what reinforced concrete means, I shall not expatiate the properties of this material; it would sound commonplace, although it is hardly six years that it was known here. I shall only mention that experimentors all over the scientific world tried to excel each other in the number and scope of tests and I hardly believe that the properties of steel, and I know that the properties of wood, were not so thoroughly investigated as those of reinforced concrete. We know today, without a scintilla of doubt, what the carrying capacity of a reinforced concrete beam is, if reinforced by a given percentage of steel, and I positively assert that you cannot predict with the same degree of exactness the strength of a timber beam.

What was the effect of the earthquake of April, 1906, on the ground of San Francisco? As near as I was able to learn it produced vibrations of an amplitude of less than one-half an inch and a total wave length of about one hundred feet. These vibrations followed each other in various directions and on filled ground caused very serious upheavals to the extent of several feet, and set up in all buildings considerable vibrations. It is clear that the upper parts of a building vibrated with a much larger amplitude than the lower portions and that these vibrations in regard to amplitude depended upon the stiffness of the stories and the connections with the adjacent stories. Assume that the third story of a building was less braced than the second story. The amplitude of the vibrations for the third story was then considerably larger than those for the second story, with the result that great shearing forces were produced at the connections at the third floor level, which forces certainly must have been very large considering the momentum of such great masses being whipped at such a great speed. Now the time of these vibrations coincided only in the rarest cases with the vibrations of the ground, making it thus possible that counter shocks were produced which caused much larger shearing stresses than those before mentioned. If the connections could not stand these horizontal shearing stresses, a horizontal displacement must have taken place, which may or may not have been followed by failure. Such horizontal displacement you can observe in many parts of the City Hall which are still standing and in other buildings and monuments in the city. The fact, that the vibrations depend entirely on the relative stiffness, is also clearly shown by the fact that pictures were thrown from the walls and other objects not in rigid connection with the mass of the buildings had to undergo much more violent movements than the buildings themselves. It seems therefore advisable in an earthquake country to build buildings as uniform in stiffness as possible throughout the various stories.

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* Paper read before the San Francisco Chapter, A. I. A.

Let us now return to the vibrations of the ground. I mentioned that they amounted to less than ½″ in a wave length of 100 feet. The vertical displacements made themselves felt in half this length, that is, 50 feet. Let us now assume a building has walls or columns 16 feet on centers, the relative vertical displacements of these walls or columns amounts then to only $\frac{1}{16}$″, which is an insignificant amount and certainly can be taken care of without the least cause of uneasiness by either timber, steel or concrete construction. The more or less sudden application of the forces will be equivalent to a relative displacement of perhaps twice this amount, but even one-third of an inch of relative displacement will not as a rule cause undue stresses.

Popularly it is believed that frame buildings are the only proper buildings for an earthquake country because they have a "give", meaning probably that they return after their vibrations to their old positions. Mathematically speaking wood has a coefficient of elasticity of one and a half million, concrete of two and a half million, steel of twenty-nine million. Steel is certainly more perfect elastic, concrete at least just as well elastic as wood and therefore we cannot believe that wood it better adapted on this account. The cause of the better behavior of well built frame buildings over brick or steel buildings in earthquakes lays in the fact that they are built more uniform, they are built on the box principle, the various partitions are well connected with the walls, the whole structure is comparitively very light, therefore the momentum produced by the whipping action of the quakes is very much less than in any other class of buildings and therefore the horizontal shearing force is very much smaller. Now take a well built reinforced concrete building. What is it but a box construction similar to a frame building? It is the invariable practice of the competent designer of reinforced concrete buildings where wind pressure enters into the consideration of the design, to provide at least one or two reinforced concrete cross partition walls to take care of the wind stresses. These partition walls are sometimes objectionable, nevertheless they have to be put in, if the owner wishes to have a building to stand any length of time, or to remain plumb, or to have any factor of safety at all. How much more are such cross partition walls required in a building which is purposed to be quake proof? There is no doubt that the connections of a properly designed and properly built reinforced concrete building are very much stronger than those of a frame building, both absolutely as well as relatively in regard to the greater weight of concrete. Most of the failures of brick buildings were to be ascribed to the poor connections of walls with floors or to the poor bond of the brickwork itself, which could not withstand the shear produced by the momentum of the heavy brick walls.

Reinforced concrete walls weigh one-half and often less than one-half of brick walls which have to do the same duty, and by the nature of the construction are well connected with the floors. It is of course clear that it is not sufficient to design such a building for static stresses alone. The best built building must not necessarily, if this be the case, be able to stand a serious quake. The whipping action produces stresses in every direction in the building, also up and down and as a building is usually only figured for downward loads, the amateur designer might commit a serious blunder in not giving attention to these secondary stresses. Now this is a mistake which is not to be ascribed to reinforced concrete as a building material, and which I am sorry to say is found in more than ninety per cent of all reinforced concrete buildings ever erected. Reinforced concrete has the disagreeable property of shrinking. How often have you seen that all proper precautions were taken to prevent the effects of shrinkage? Shrinkage cracks are often harmless, but very often they are of vital importance. The most dangerous place is in the connection between girders and floor slabs.

The greater mass of the concrete of the beams tends to shrink away from the slabs, and it is of the utmost importance to prevent this, by the simple and inexpensive use of stirrups which reach from the beams far into the slabs on both sides of the beams. The cracks at the junction of beam and slab reduces the strength of the beam often to one-fourth of that of the Tee section. How much more vital are these stirrups in earthquakes, where these cracks certainly will develop and increase, even if they did not exist before or were only invisible to the eye. The connections of the columns at the various floor levels deserve the greatest attention of the designer. To connect the rods by sleeves eight to twelve inches long is more than sufficient. Three feet long sleeves at least one-half inch larger in diameter than the largest rod they connect should be considered the minimum for good practice, or in case of small rods overlapping of the rods to the extent of thirty to forty times their diameter.

I cannot enough warn you, whether you design a concrete or a steel building, not to make the size of your columns too small, if you want your building to be earthquake proof. If it is absolutely necessary to omit all the partitions in the first story of a building, your only reliance and salvation lays in the columns, and if you reduce their stiffness you set your buildings practically on stilts, and their earthquake proof qualities are then less than doubtful.

Since times immemorial people used to look to the walls for the stability of buildings. Since the introduction of the skeleton principle in steel and reinforced concrete construction the walls are merely curtains, and contribute hardly more to the stiffness of the skeleton than the glass panes of the windows, while a concrete wall is able to increase the stiffness of a concrete or steel pilaster from four to ten times the former rigidity. This is speaking of the stiffness of a building crossways to the direction of the walls. Of course, in the direction of a wall, the latter is of quite a formidable help to the skeleton, even if only 12 inches thick, and probably increases the stiffness of the skeleton from fifty to many hundred times, which is, however, a poor showing in comparison with a reinforced concrete wall which probably stiffens the skeleton from one thousand to ten thousand times and more. If a building is not too narrow or not too much cut up we can safely figure that the floor construction will act as horizontal girders to transmit the horizontal shears to the end walls, which as girders of 50 feet or more in depth are certainly able to take care of these forces. If the walls have very large openings or if the area of the building is large, you have to adopt reinforced concrete partition walls, say in distances of fifty feet. You have then a greater stiffness than in a modern steel boat which, as you know, has to withstand shocks as no other structure to our knowledge.

I promised to prove that you can build a reinforced concrete building which is really earthquake proof for less money than a steel building. In order to do this we have only to compare the cost of the structural parts. From your experience with steel skeleton buildings you know that it takes about 20 lbs. of steel for each square foot of floor in the building. Add to this about one and a half lbs. of steel for the reinforcing of the concrete slabs of small span, you have a total of 21½ lbs. per square foot. You will have to figure on an average of about seven inches of concrete per square foot for the fireproofing of all columns, girders and for the floor slabs, and you will need at an average about two feet of lumber per square foot to do the form work for the fireproofing. Let us figure the steel erected and painted at the low figure of $75.00 per ton the concrete at 45 cents per cubic foot, the lumber at $60.00 per thousand feet erected, taken out and re-used, we arrive at the total cost of $1.19 per square foot of steel skeleton and fireproofing.

In a reinforced concrete building we shall need an average of not more than seven lbs. of steel, about eight inches of concrete and about three and a half feet of lumber per square foot of floors for the structural part of the building. Figuring in this case much higher unit prices on account of the inexperience of workmen and contractors, and considering that the price of plain steel rods (and I have not found anything in my experience which warrants the use of any kind of patent or fake bars) is only $2.20 per hundred f. o. b. San Francisco in carload lots, we will assume the cost of the reinforcing steel placed as $65.00 per ton concrete at sixty cents per cubic foot, the cost of the form lumber erected, taken out and re-used as $70.00 per thousand, we find that the cost of the reinforced concrete skeleton amounts to 88 cents per square foot against $1.19 in steel.

In order to make the skeleton earthquake proof beyond question, we will figure on providing reinforced concrete partition walls and we will assume that the area of these walls is one fourth of the area of the floors. A reinforced concrete partition cost probably 30 cents per square foot more than a hollow plaster partition, or reduced per square foot of floor, this extra expense would amount to 7½ cents per square foot, or a grand total of 95½ cts., for a really earthquake proof structure, against $1.19 for a steel skeleton building, the condition of which after an earthquake may be serious, if not stiffened by similar partitions. You undoubtedly will agree that I assumed very high unit prices for reinforced concrete construction, which is at present only too necessary on account of the inexperience of all connected with this construction but these prices will certainly be liable to a reduction of at least twenty-five per cent in a year or two, with the perfection of workmanship and with the experience gained by the contractors, a fact which can be found in any part of the United States wherever concrete construction was carried on for a few years. I neither took in account the great savings of reinforced concrete footings over steel beam and concrete footings, which amounts to at least fifty per cent of the cost of the latter, nor did I take into account the very substantial saving by omitting the false ceiling in concrete buildings where square panel construction without intermediate beams are the standard of design, and where the beams may be arranged to come in the partitions, thereby saving in the height of the stories, and offering a more substantial ceiling than the unsatisfactory wire lath and plaster construction. There are yet many other points in favor of reinforced concrete buildings, which it may be worth while for you to consider before you decide on the type of construction you are going to adopt.

* * *

The Vacation

40 weeks' anticipation,
10 of bustling preparation,
 1 to pack and reach the station;
 1 of final realization.
52

—Outing.

The Remuneration of Architects

By GLENN BROWN, Architect, Secretary of the A. I. A.

MORE or less has been published in the past relative to the fees of architects and the return which they receive for their work.

In England the office of works, one of the recognized ministries of the country, is in charge of all Government buildings, except military barracks, local admiralty buildings and police stations. The great Government buildings in England have been erected by architects who have no connection with the Government.

The remuneration of an architect for his services by sufficient sums to reimburse him for the most careful study of the problem, the most explicit and elaborate preparation of drawings, and efficient supervision of the construction, will secure the client or government the best result in the completed building. Anything less should not be considered.

The proper sum for such services can only be ascertained by what experience has proved to be the cost of producing the work by architects in charge of large buildings and who have given the study, prepared the drawings and conducted business so as to produce good results in completed structures. The expenditure of millions in structures which must permanently beautify or mar the landscape are not proper fields for experimenting with untried methods or inexperienced men.

By an inquiry among the various architects of the country who have been doing such work, I find that the actual office expenses amounts to from 2½ to 3 per cent on the cost of the building; out of this percentage the architect receives nothing. As 5 per cent is the amount usually paid, the 2 or 2½ per cent which remains after paying expenses of the office covers the actual cost of supervision and the remuneration to the architect. If he secures 1 per cent out of this for his service he is fortunate.

The cost of production stated is only for large work; small monumental work costs approximately more.

In this connection, as a proof of what such service costs, and the remuneration usually paid in this country and abroad, the reports of the Government officials and statements from foreign countries go to prove that instead of architects receiving less that the usual 5 per cent they should, to properly compensate them, get a greater percentage in most cases.

Taking the supervising architect's office, which in recent years has been conducted in a thoroughly efficient manner, we find that the office expenses of producing drawings and conducting the work, exclusive of the cost of sites and the cost of buildings erected under the Tarsney act and exclusive of superintendence, have been for three years 6.3 per cent for the office work, on the amount expended in building, while superintendence during the same period cost 2.4 per cent on the amount expended in building, making the total for the preparation of plans and supervision on an average for the past three years of 8.7 per cent on the amount expended by this office, excluding the buildings which have been erected under the Tarsney act.

Captain John B. Sewell, under whose efficient management the Government Printing Office has been built, in his report of November 3, 1903, states the architect's services, draftsmen and office expenses amounted to 6.6 per cent on the cost of the work. This is exclusive of cost of experts in heating, ventilation, plumbing, electrical installation and his own salary. When these items, which would approximate about $20,000 during the period of the building covered by the report, are added to the expenditures, it would bring the percentage of the cost of the building up to more than 7.5 per cent for drawings and superintendence. The report of the Superintendent for the Capitol for 1902 shows that his own salary not being included, the reconstruction or fireproofing the central portion of the Capitol cost $153,500, and that the pay rolls in the superintendent's office relating to this branch of the work, together with the fee for consulting engineer was $25,813, or a percentage on the cost of work, more than 16¾ per cent. The fee of the consulting engineer, $4760.28, amounts to over 3 per cent on the total cost of the work and 7.7 per cent on the cost of structural steel and general contract, as shown in the report of the Superintendent of the Capitol Building and Grounds, June 30, 1902.

In this connection the fees paid by foreign governments to architects for large pieces of construction show that our architects receive less personal remuneration for similar work done in the United States at the same rate of compensation. The American architect, with higher salaries paid to draftsmen, higher rents and no architectural pupils paying for the privilege of doing work, is receiving smaller remuneration that his professional brother across the water.

In England 5 per cent on the cost of the work is paid to the architect, while much of the time and labor is saved to him by the limited sets of drawings he is expected to furnish and the bills of quantities which are made by the surveyor, and for which the owner pays 2 per cent. A clerk of works and an inspector is provided by the owner or Government. They are selected by and under the orders of the architect.

In France the same system is in vogue as to payments. The municipality of Paris has recently established a schedule of fees for the payment of architects on municipal work, paying 6 per cent on the first 200,000, 5½ per cent on the second 200,000 and 5 per cent on the third 200,000 francs, 4½ per cent on the fourth 200,000 and 4 per cent on all additional cost. Thus the fee on the largest building is between 4 and 5 per cent, and the Government provides, subject to the order and on the indorsement of the architect, a superintendent and a clerk of works as well as the inspection given by the Building Council, while his office expenses and draftsmen's wages are from one-third to one-half what is paid by the American architect.

In Germany the rates paid by the Government on the work when private architects are employed is in accordance with the schedule of the Society of Architects and Engineers. These rates vary according to the character of the building and the cost of the structure, simple buildings, like sheds and factories, being done at a less rate than more ornate structures. A separate increased rate is charged for decoration in the class under which Government buildings are placed. The rate for the most expensive building in their schedule is given at $2,000,000, and the rate for $250,000 worth of decoration and $250,000 worth of furniture makes the rate on the total sum a fraction over 5 per cent. The schedule provides for numerous extra charges for heating, lighting, ventilating, water, sewerage and electrical arrangements and salary for building foreman and inspector. Traveling expenses, acquisition of building site and per diem to the architect while traveling.

The Russian Government pays the architect on the building being erected by the Minister of Marine at the new port of Liban on the Baltic 8 per cent on the cost of the building.

In Italy when an architect or engineer is not working on a salary he receives a 2 per cent retainer, 4 per cent on the completion of his drawings and 8 per cent for the total direction of the works.

The Swiss architects and engineers have a very carefully prepared schedule of charges. The buildings are divided into classes, factories, sheds, etc., being in the first class and for which the smallest percentage is paid. The commission is also graded according to the cost of the structure. In the class to which the Government buildings belong 5 per cent on the total cost is the smallest percentage paid for the largest structure, while it runs up to 8 per cent for small structures of this class.

The clerk of works or superintendent is employed or paid by the owner, but he is under the direction of the architect; all traveling expenses and an additional per diem are charged while traveling in addition to the percentage. Some of the special regulations of this schedule are interesting.

By the various schedules it will be seen that the foreign architect protects his interests more carefully than we do usually in this country against both the Government or the owner and the contractor, demanding payment for extra services for many items which an architect does in this country without extra compensation.

In every instance the answer from foreign countries has been that the architect who designs the building supervises it until completion, although in many countries the Government is represented by technical commissions and inspectors and employs superintendents and clerks of works, they are all, with the exception of the commissions, under the direction of the architect, and the architect is responsible both for design and construction of the building.

After a building of importance is completed, its maintenance, repair and additions thereto are not left to the tender mercies of men unfamiliar with design and construction, but the architect who designed the building is retained at a small yearly salary to maintain or add to the building until his death, when another architect, familiar with the structure, fills his place. In some countries a technical board of works, on which a majority of the members are architects, have charge of the maintenance of government buildings.

It seems necessary to add that from the foregoing data the architects in this country do more for less compensation than do the profession in the other civilized countries of the world.

The cost of work in the engineering profession, which is to a certain extent similar to the work of an architect, may be considered in making a comparison with the cost of producing drawings in an architect's office. It must be remembered that the drawings made by engineers are not so numerous and are less elaborate than those made by architects. The data received from engineers shows that government engineers usually allow 10 per cent on the cost of work for the items of superintendence, field engineering and office expenses. A prominent railroad engineer states that office work and supervision in engineering has cost him 5 to 7½ per cent on the total cost of the work. This is confirmed by another large railroad system where the engineering work actually cost from 5 to 8 per cent, according to the character of the work. Another railroad company, in making estimates, allows for engineering service according to the character of the work from 5 to 10 per cent on the cost of the work. The Commissioner of Public Works of St. Paul says that expenses of engineering work cost 5.11 per cent on the amount expended, while for mechanical work or shop work they allow 15 per cent on the cost for drawings and supervision.

It is customary for contractors when they do work by the day to charge 10 per cent on the cost of material and workmanship. This appears to be a time-honored custom to which no one objects.

The value of services can be measured by the prices paid by capable business men; it has been the custom for years for business men and large corporations to pay architects in this country and Europe 5 per cent on the cost of buildings. This is an old custom, which has in the last few years become a burden upon architects, as building has been rapidly becoming more and more complicated with the introduction of mechanical plants for elevators, electric lights, telephone service, heating and ventilating plants, all of which must come under the control of the architect and be considered by him in relation to the building as a whole. The employment of experts, paid by the client in these various branches, only partially relieves the architect.—Inland Architect.

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The Comparative Cost of Wood and Concrete Piles

THE increasing use of concrete piles brings up the question as to how they compare in cost with wood piles, upon whose domain they are encroaching to a constantly increasing extent. One of the chief factors making toward the increased cost of wood piles is their growing scarcity. This is largely due to the recklessness with which our forests are being yearly depleted.

The cost of concrete piles as compared to that of wood piles was brought out in a striking manner during the erection of the new buildings of the United States Naval Academy at Annapolis, Maryland. The original plans called for wood piles, but as the allotment made for the various buildings had been exceeded, it was found necessary to reduce costs wherever possible. Calculations showed that by using concrete piles, a saving of over $27,000, or more than 50% of the cost of wood piles could be effected.

The various factors which tended toward the economy resulting from the substitution of concrete piles are thus stated by Walter R. Harper, inspector in charge of the work; 2,193 wood piles were replaced by 885 concrete piles; 4,543 yards of excavation were reduced to 1,038 yards, saving 3,504 yards; and 3,250 yards of concrete footing were reduced to 986 yards, thus saving 2,264 yards. Shoring and pumping, which would have cost $4,000, had wood piles been used, was entirely eliminated. This indicates, in a measure the means by which foundation costs were reduced as stated. Furthermore, the permanence of the foundation is beyond question. This would not have been the case, had wood piles been used.

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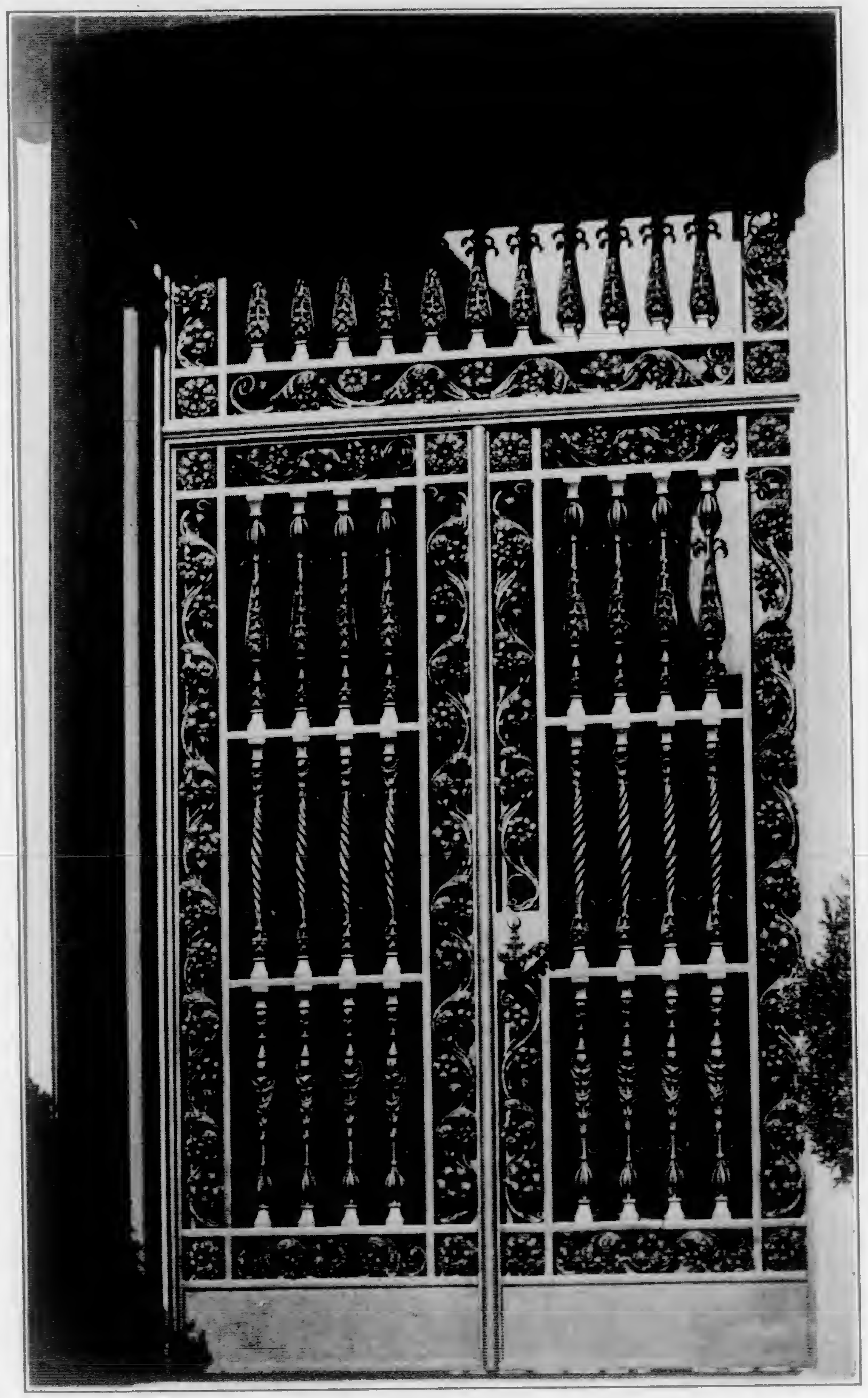
A Reversible Theatre Floor

An interesting as well as novel feature of the new Apollo Music Hall on the Rue de Clichy, Paris, is the reversible auditorium floor, which makes it possible to change the parquet into a dancing floor in the short space of seven minutes. On one side of the floor are fitted 500 chairs of the usual folding variety, and on the other side it is planked with hard wood, waxed and polished. During the performance each night it is pitched at an angle of about 15 degrees, like the floor of any other theatre. When the show is over and the dancing begins it is absolutely level. When the curtain falls the seat holders are hustled back into the orchestra circle and the foyers, and then the mechanism is set in operation.

The floor, or rather the two floors, are built on each side of a framework of steel girders. This is hung on pivots, and when the machinery is set in motion it simply turns the other side up. The huge seesaw—it measures about 45 x 50 feet—stops at the appropriate angle when it is to be an auditorium and is secured there by strong supports.



Bronze Doors in Residence of Dr. William Tevis
Designed by John Galen Howard, Architect
And Made by Chas. Deterding

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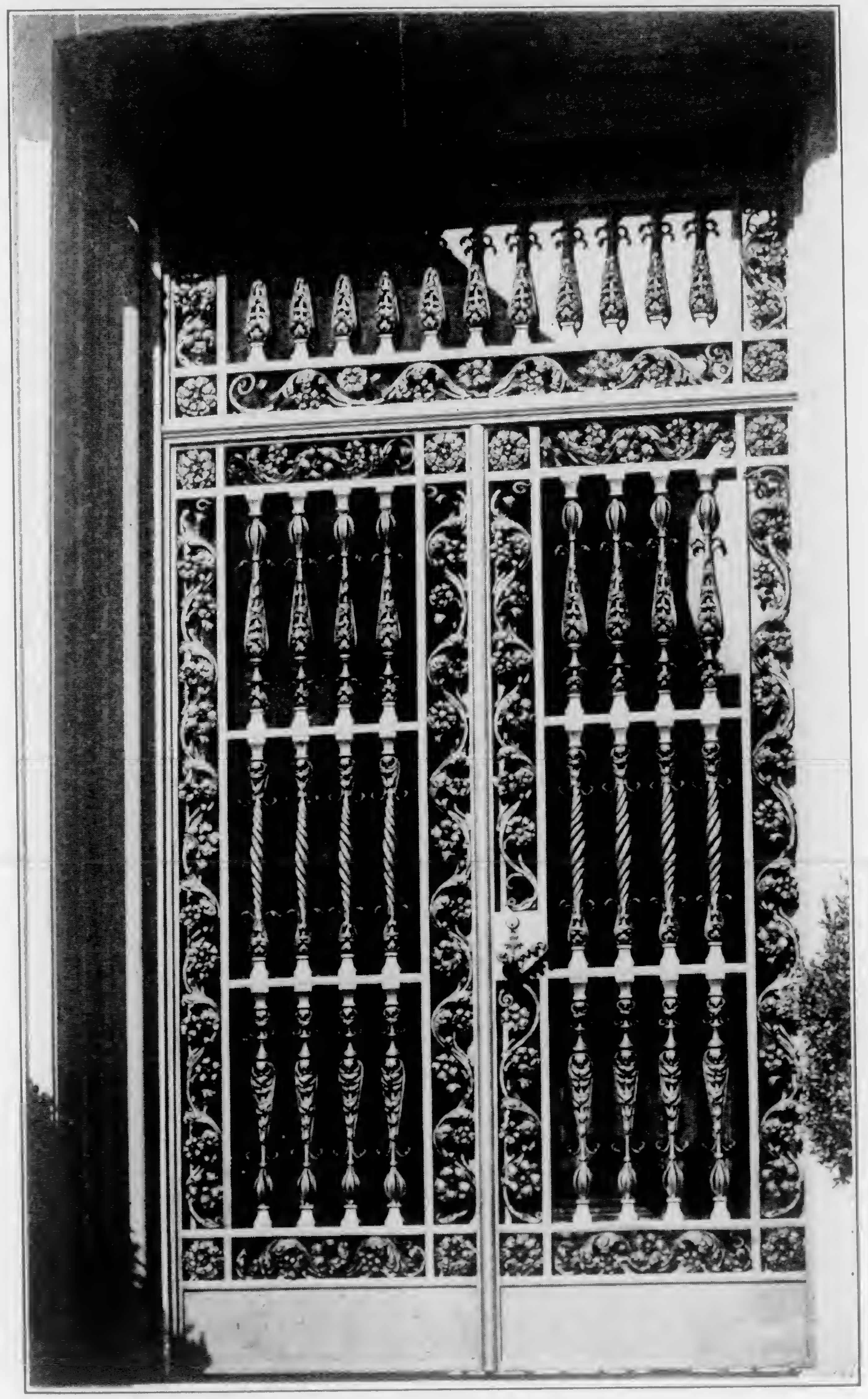

*Bronze Doors in Residence of Dr. William Tevis
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The Safety of Our Skyscrapers

By F. W. FITZPATRICK, Executive Officer of the Intn'l Soc. of Building Commissioners.

THE alarming prophecy made by Mr. Babb, the president of the New York Board of Underwriters, that it is only a question of time when there would be a grand conflagration in New York's down-down "skyscrapers", is stirring up a tremendous ado and some needless alarm in that city. As a matter of fact those buildings, even as they are now, are about as safe as any section of any city in the country and with a few additional precautions could be made the safest abodes one could find anywhere.

Generally speaking, the skyscrapers are of steel frame, thoroughly protected from fire with brick and fireproofing tile so that there is absolutely nothing structural upon which fire could prey. The contents of the buildings offer the greatest element of danger. If the owners would but close off the stairs and elevator shafts, thus making each story a separate unit or virtually a building by itself, nothing but the contents of some one story or part of it could be destroyed by any internal fire. The greatest danger is that fire would find ingress to many of these stories at the same time from some external blaze. One cannot compare the New York down town district with that of San Francisco or that of Baltimore. It is of a much more substantial character and the skyscrapers themselves are also much better built. Make it impossible for fire to be communicated from adjoining buildings, and that can be done by making every window a barrier by using metallic sash and wire glass, and you have lopped off just eighty per cent of the existing danger! Provide ample local water supply, tanks, etc, on the top of those buildings and then train the employees so that they are not dependent upon the city fire departments for extinguishing incipient fires within and you have in those skyscrapers a veritable bulwark against the progress of any conflagration. Indeed, the fact that so many of New York's and Chicago's tall buildings are close together insures their safety. Further, although it may seem paradoxical, if you could build an entire city or at least a district of it of nothing but incombustible buildings, they need not be made what is called "fireproof", because you would have eliminated the possibility of fire by giving it nothing upon which to feed.

Admitting, for the sake of argument, that Mr. Babb's note of alarm is justifiable, is it not a bit late for the insurance companies to cry "wolf, wolf"? If tall buildings are not the proper things to build they had it in their power to prevent their construction; if fireproof buildings are the proper structures to erect, they have it in their power to make it so that none others could be built; indeed the insurance people are well-nigh omnipotent in matters of construction and can reasonably be blamed for nine-tenths of the ills in that connection from which we suffer. It may seem a bit harsh, but I blame them more than anything else for San Francisco's awful fire.

None know better than the insurance engineers how buildings should be built. For instance they have given us in the Board of Underwriters' Laboratory in Chicago, the one perfect example of a full-fledged fireproof building in the country, but spite of that knowledge they have virtually connived at inferior construction by not making their rates upon such buildings prohibitive. In San Francisco the insurance rate was ridiculously low, because, forsooth, there was such a good fire department, and the result was that people built only as well as they had to, or as well as the rates they could get justified them in doing, and the major part of the construction there, was, to use a mild term, rotten. Apart from any sentimental, public-spirited reasons the insurance companies should make their rates on poor building higher and much lower than they are on safe, first-class construction. That is one of the principal things that will induce people to build properly. Besides it would be sound business policy for the companies. That spite of all their scientific tabulations and reasonable basis of expectations, etc., so many of them go "to the wall" in normal times and they are all so mightily squeezed after each great conflagration is proof that, skilled and shrewd as they may be, they are not infallible.

More than that I would even go so far as to say that a good deal of the insurance business is secured under false pretenses. Here is the modus operandi: And it is the history of almost every city. First insurance rates are made low upon all classes of buildings. The business men who build, going at the proposition wrong end to, find out just how imperfect a construction is permitted by the insurance people at certain rates, and build accordingly, shoddily. They are given to understand that that is all that is really expected of them. Time goes on, an examining committee of the companies visits the city, finds perhaps an unexpected aggregation of poor buildings and issues an ultimatum to the authorities that this and that improvement has to be made in the water supply and additional apparatus and firemen have to be provided. All this means more tax to the citizens and in the meantime the city declared to be so combustible that a higher, sometimes an exorbiant rate is established on all, old and new buildings. The companies could have foreseen this condition and prevented it, but they or their agents were so anxious for business and immediate profit that little thought was given to the future. Granted that the people should not be ignorant, that they should have built well in spite of the inducements offered not to, by the companies, yet the fact remains that the latter have virtually aided and abetted them in poor building and then turned around and made them pay for their fun.

People will only build as well as they are compelled to and it is "up to" the authorities and the insurance companies, our two great governing bodies—however unpleasant it may be to consider one of them in that light—to make it so that skyscraper or cottage, court-house or stable shall be built well and so that our lives and property may be safeguarded in all our buildings. It can be done and easily.

* * *

Using His Friends

When Thomas A. Edison was living in Menlo Park, a visitor from New York said to him one day:

"By the way, your front gate needs repairing. It was all I could do to get it open. You ought to have it trimmed, or greased, or something."

Mr. Edison laughed.

"Oh, no," he said, "Oh, no."

"Why not?" asked the visitor.

"Because," was the reply, "every one who comes through that gate pumps two buckets of water into the tank on the roof."—Washington Star.

* * *

'Ah, that's pretty!" said Snooks, looking over a number of architectural designs. "What is that?"

"That," said the architect, "is a fifteen-hundred-dollar bungalow."

"What will it cost to build it?" asked Mr. Snooks.

"About $8,000," said the architect.—Judge.

Concrete Water-Proofing Under Heavy Water Pressure

IN VIEW of the great importance of the problem of water-proofing concrete construction, particularly in some sections of San Francisco, the following extracts from a report of W. E. Wagner, C. E., will be read with interest. This report is furnished to us by The Building Material Co., Inc., agents for the manufacturers of the water-proofing referred to in the report. This report also appeared in a recent issue of the Engineering Record:

"The excavation for a well 6 ft. in diameter and 80 ft. deep, for a shot tower built for the Equitable Powder Co., of East Alton, Ill., was recently made in sand, gravel and clay which carried large quantities of water, and a perfectly waterproof concrete lining provided for it under particularly difficult conditions. The works of the power company are two miles from the Mississippi River, but owing to the many and varied strata of sand and clay encountered in the excavation, it is considered that the course of the river was at one time over the site. A test hole put down at the latter to a depth of 40 ft. with a 2-in. pipe determined that about 10 ft. below the surface was a stratum of sand, 6 to 8 ft. thick, which changed gradually into coarse sand and gravel containing a large amount of water. Under this sand and gravel was a bed of blue clay followed in order by strata of fire clay, quicksand and then clay again.

"A well with a clear diameter of 6 ft. being necessary, and a 9-in. concrete lining having been adopted, an excavation at least 7. 5 ft. in diameter had to be made. The nature of the materials to be passed through was considered to be such that a one-piece casting of constant diameter could not be forced down. Accordingly the casing was made in eight vertical, cylindrical sections built of 5-16-in. boiler plate. Each of these sections had a 1½ x 3-in. reinforcing ring at the top and bottom, the top ring being riveted to the outside and the bottom ring to the inside of the casing. The section at the top was 10.5 ft. in diameter, the next one below it, 10 ft. 1 in. and so on, each section differing by 5 in. from the previous section in order that the various sections could be telescoped and the joint between the reinforcing rings calked with oakum. Each section was prevented from sliding down over the one below it by ½ x 3 in. angles bolted to it; these angles also locked the sections together.

"The first and second sections were put down without any difficulty, the excavated material being taken out in buckets raised to the surface by a hoisting engine, and the water encountered discharged by a steam siphon. The real difficulties were first encountered in sinking the third section when the water began to flow in such quantities that the siphon could no longer handle it, so a 500-gal. duplex pump was installed. This pump was set on a platform swung at the bottom of the excavation on a wire cable suspended over a chain block at the top of the well, enabling the platform to be lowered or raised as desired. The pump could only just handle the water that flowed into the excavation from the coarse gravel encountered in sinking the third section. The sinking of the last few feet of the latter was in clay and was accomplished without difficulty.

"In sinking the fourth casing, however, work was nearly stopped when the cutting edge entered a bed of quicksand. The section was finally forced through the quicksand with eight jackscrews spaced equally around the rim. After penetrating about 18 in. into the clay below the quicksand, the power afforded by these jackscrews was found to be inadequate to force the shell down further, so this section was left 1 ft. above its proper place. By this time the water had been nearly shut off by making the excavation slightly smaller than the ring, the remaining clay forming an almost watertight joint. During the sinking of this and all the subsequent sections the joints between the latter would occasionally break loose and until they could be calked again large volumes of water carrying sand and clay would pour into the excavation. This calking could only be done with great difficulty as the leak would travel around the casing and force out the oakum in fresh places. The joints could not be made tight enough so they could be poured with lead and no other means could be devised to make them dry enough to permit concrete to be deposited against them, for of course the smallest leak would have washed out the green cement.

"The large horizontal pump was found to be unsuited to the work so a vertical outside packed plunger pump with a capacity of 33 gal. a minute was secured. At this time there was a leakage of only 5 to 6 gal. a minute which came through the joints or followed down the outside of the casing and came in at the bottom. Good progress was made for a time under these conditions, when suddenly a stream of water forced its way up through the clay in the bottom and the large pump was placed in service again. The last clay was removed 10 to 12 ft. below this break, leaving a bed of sand carrying a heavy flow of water. After considerable difficulty with the pump, the casing was forced down by working the jacks and excavating the sand simultaneously. After sinking the section 7 or 8 feet. in this manner the pressure on the outside of the casing caused the water to gush forth and pile 3 or 4 ft. of sand up in the bottom of the excavation. By carefully removing this sand and at the same time forcing the casing, a foot or more could be gained before another rush of sand and water would temporarily suspend the work, making progress slow.

"The leaks which occasionally developed at the joints had meanwhile carried so much sand and clay into the excavation that the surface of the ground had cracked and settled over an area 40 ft. in diameter around the mouth of the well. This sinking finally became so marked that the decision was made not to go any lower, for although the last section had not been put down an extra 7 ft. of depth was gained by the settling of the ground at the surface. Before preparations could be made to build the concrete lining, however, a heavy flow of water broke through between the fourth and fifth sections and the subsequent movement of the soil around the casing squeezed the latter to an egg shape. Fearing the entire casing might collapse the well was allowed to fill in order to balance the pressure on both sides of the casing. As this occurred late in the fall operations were suspended until spring.

"A steam-driven deep-well pump, with a Cook well point, was set up when work was started in the spring, and proved very satisfactory in keeping down the water. When the latter had been removed it was found that about 20 ft. of material had filled in at the bottom of the excavation. As soon as this was removed the sand again began to come in, but the bottom was readily sealed with two layers of sacks of concrete. The water was then permitted to rise in order to relieve the pressure on the concrete while it was setting. When this concrete was hard, the water was drawn down again and 30 in. of concrete laid over that in the sacks. A rectangular opening was left in this floor for the well point on the suction of the deep well-pump. This opening was covered with steel plates placed around the well point and a 12-in. concrete floor laid over the whole bottom. A 5-in. threaded pipe fitted with a flange was also placed through the floor to prevent the water pressure coming on the latter if the pump failed. This 5-in. pipe was provided with a blank flange tapped for a 1-in. and a 2-in. pipe which were used later in filling the opening around the well point.

The concrete lining was placed in forms built of 2 x 4 in. lagging spiked to circular ribs. These forms were made in sections 10 ft. long, the length of each section of the casing, and were built in six segments. New ribs were required for each section owing to the changes in the diameter of the excavation, but the lagging was used repeatedly. The forms were made above ground and the segments lowered into the well, where those of a section could be bolted together and beveled ready for the concrete in 2 to 3 hours.

"The angle braces on the casing which were not already sheared off when the water was drawn down in the spring were removed. The joints between the sections were then calked with fresh oakum, and dried white pine tongue and grooved wedges were driven into them with sledges. In spite of these precautions the joints continued to leak so they were covered with strips of tin, leaving a hollow at the joint through which the water was conducted to a pipe leading through the forms.

"The concrete mixture consisted of 1 part Portland cement, containing 1½ per cent by weight of Medusa waterproofing compound, 2 parts of coarse river sand and 4 parts of crushed limestone, which would pass through a 1-in. screen and be held on a ¼-in. screen. Tests of various waterproofing substances, such as a mixture of alum and soft soap and hydrated lime, were made before the work was commenced, with the result that the Medusa compound was adopted. Test blocks of concrete containing 1 per cent of this compound mixed with cement showed no penetration over 1-16 in. in depth after being soaked for 48 hours in hot water, while plain concrete mixed in the same manner was found to be saturated under the same conditions.

"No night work was done in placing the concrete, but the damp air in the well prevented the latter from attaining much of a permanent set over night, and the surface of the finish work was carefully washed with neat cement each morning. The water was allowed to rise in the well as the concrete was brought up and after the work was finished was allowed to stand for six weeks so the concrete would be sufficiently hardened to resist the pressure head that would be brought against it. When the water was pumped out the various pipes that had been left in the concrete to handle the water from the joints in the casing were filled. The compartment containing the point of the pump was finally filled through the 2-in. pipe in the flange on the 5-in. pipe left in the floor. A certain amount of seepage was expected through the lining, but after remaining damp for several months the concrete became as dry as concrete above ground.

"The 2 to 3-in. cracks in the surface of the ground around the mouth of the well were washed full of sand and then a square several feet larger than the footing for the building was excavated to a depth of 14 ft., the upper 6 ft. in sunken ground and the remainder in solid earth. The bottom of the excavation was then covered with sand on which the footing walls and piers for the tower were built, the remainder of the excavation being filled to the ground level again with earth. Elevations determined on the footing walls showed a slight settlement when the full load of the superstructure was first placed on them, but this has now ceased and the tower has not been strained in any way."

* * *

Beware of the man who is affected with excessive politeness. He probably has designs on a slice of your bank balance.

Electrolytic Corrosion of Iron and Steel in Reinforced Concrete

IN A paper presented to the American Institute of Electrical Engineers, Mr. A. A. Knudsen gives the results of some experiments which he has made and which he thinks have proven that electrolysis will affect steel imbedded in concrete, wherever the electric current leaves the steel, and that the disintegration of the concrete in the vicinity follows as one of the consequences. His conclusions regarding the protection of steel from corrosion and of concrete from disintegration are stated as follows:

Coatings of various kinds of paint or varnishes will be of little use as an insulation, for it must be borne in mind that not only a moisture resistant is required, but an insulation that will resist continual moisture, and also that will stand the pressure of great weight. From laboratory experiments as well as observations in practice, we draw the following conclusions:

1. Steel structures are well preserved from ordinary corrosion by concrete placed either in salt or fresh water. This, however, has long been known.
2. If but a small fraction of an ampere of electricity passes from an interior metallic column or structure into concrete or masonry as usually made, there will be corrosion of the metal and disintegration to the concrete masonry.
3. Structures of steel in concrete that are subject to sea water are in more danger from electrolytic action than those in fresh water, by reason of the lower resistance of concrete in the sea water as shown by the laboratory experiments.
4. In no sense can concrete be considered an insulator, and it is from all appearances just as good an electrolyte as any of the soils found in the earth.

* * *

He was a Union Man

Two miners got into a fight one night in a saloon in one of California's busy mining camps.

They were giving it to each other hot and heavy, when another miner, by the name of Riley, tried to separate them.

While he was trying to separate them a constable came in and arrested them.

Next morning, when they were up before the judge for trial, Riley kept interrupting the proceedings by declaring he wasn't fighting, only trying to part them.

The judge tried to quiet him by telling him that he was held as a witness only, and, as he did not stop, the judge said: "Riley you are sentenced to pay a fine of $10 or serve 10 days in jail for contempt of court."

With that Riley jumped up more excited than ever, and said: "No you won't judge. I won't go to your old jail for 10 days. No, sir; I am a union man and b'gorry you can't put me in your old jail for a dollar a day, b'gorry. Give me $3 a day, judge, and I'll go."

The judge told Riley he would give him two minutes to leave the room, or he would enforce the sentence.

"All right, b'gorry, judge," said Riley, as he left the room. "If you won't give me $3 a day, I'll go. I ain't no scab."

Lighting Fixtures—Good and Bad*

SUCCESS in selecting what is in comfortable good taste without having to pay the price which lies beyond what one can really afford, comes from knowing where to look. This is true in all things, but particularly so in the matter of lighting fixtures. This is due mainly to the fact that the majority of salesmen do not so much concern themselves with the particular requirements of each and every case from an artistic point of view, as in making sales—and perhaps that is only natural.

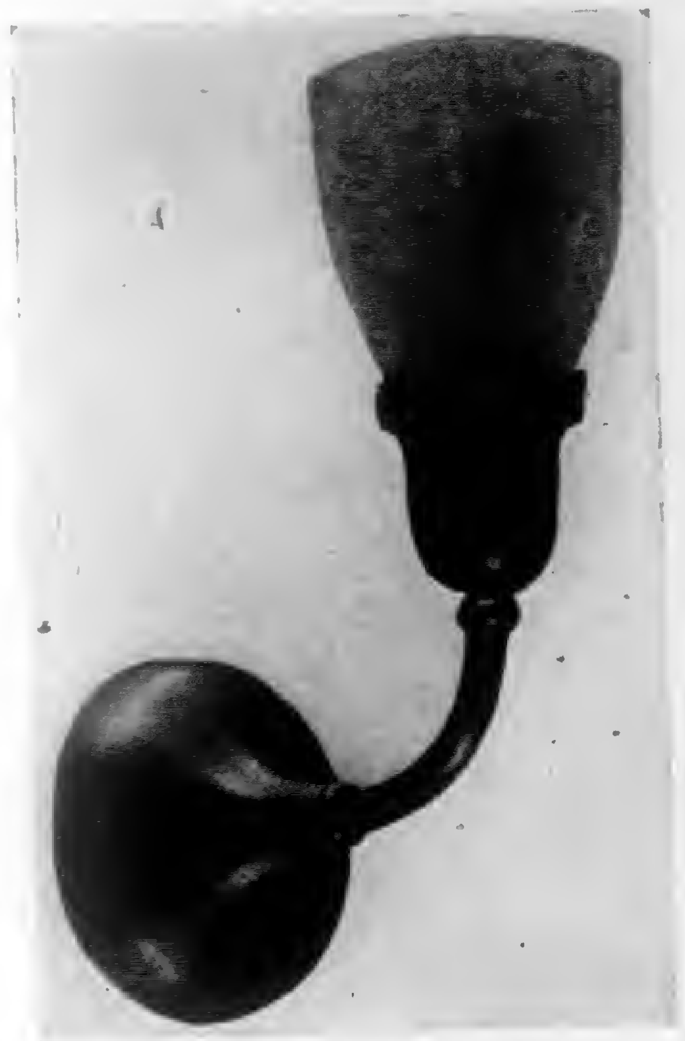

Fig. 1.

The purchaser is often enough, far from knowing what he wants. It can hardly be otherwise, for when one has spent practically his entire time and energies making enough money at his own particular calling to build a house, he can hardly be expected to be altogether capable in making a proper choice in the matter.

"Style," as the word is commonly used, suggests that which is good and proper, the right thing in the right place—that which is "neat but not gaudy"; that which one can enjoy the more as time goes by and (recognizing the fact that we all live in more or less fear of what our neighbors think of us) that respectability in our household goods that gives us assurance that friends will not come and call and think things that they would not say to us.

One of the unfortunate phases of the fixture situation doubtless lies in a too prevalent tendency toward "straining for effect." The ordinary person borne down with the cares of house-building, by the time the question of fixtures has arisen (which is almost invariably the last) has reached a point where a good salesman can, indeed, be a friend in need; left to his own resources he may select something that is wrong, and that he suspects is wrong. All he needs is good advice. The salesman who has taken pains to study into the subject and has become an artist in his line, prepared on occasion not only to give advice but to tell why, may have his troubles like everyone else for holding by his convictions to a reasonable degree; but he stands a better chance in the end than the timid type who is all "yes, sir, you're right, sir; just as you say; thank you, sir."

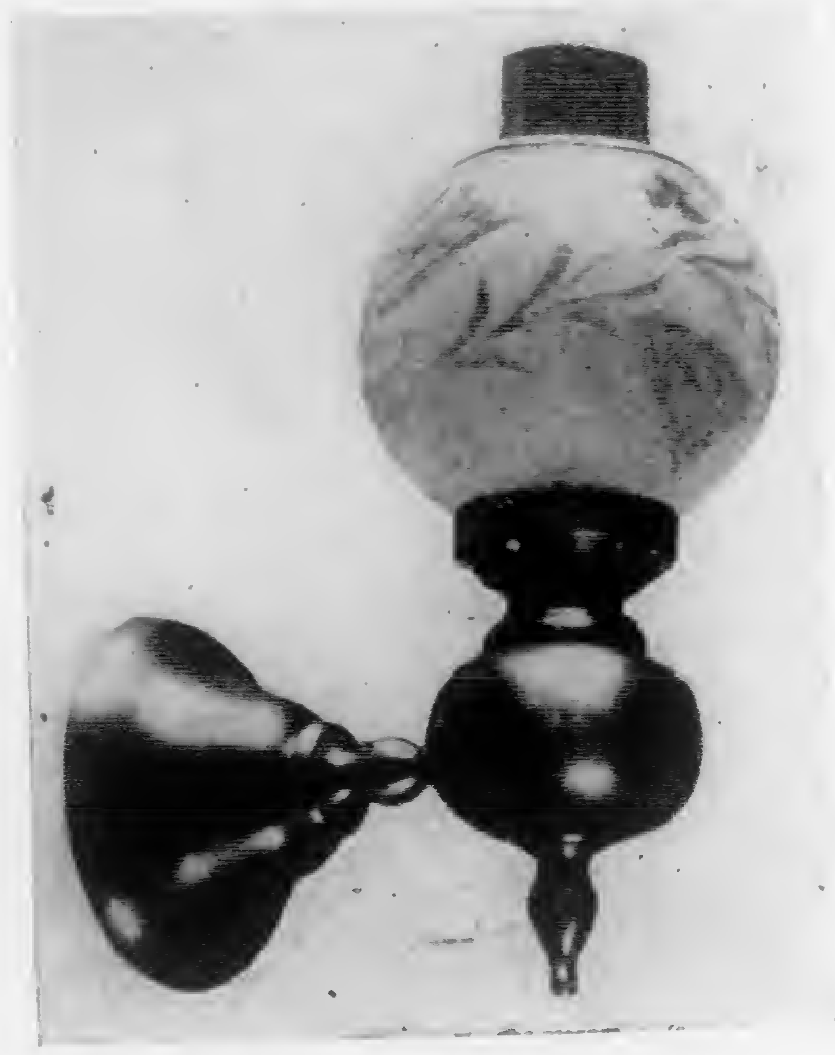

Fig. 2.

It is related that a prominent fixture company, upon being consulted in regard to fixtures for an installation of more than ordinary interest, carefully investigated the case. The prospective customer was offered several choices in the selection of fixtures which would doubtless have reflected fair credit to all concerned. But no—the prospective purchaser would have none of these, insisting rather upon a combination that seemed to the manufacturers to be at such atrocious variance with everything that lay within the realm of good taste that a protest was offered by the company; it would do almost anything but that which was suggested—anything! It was "impossible," this particular combination.

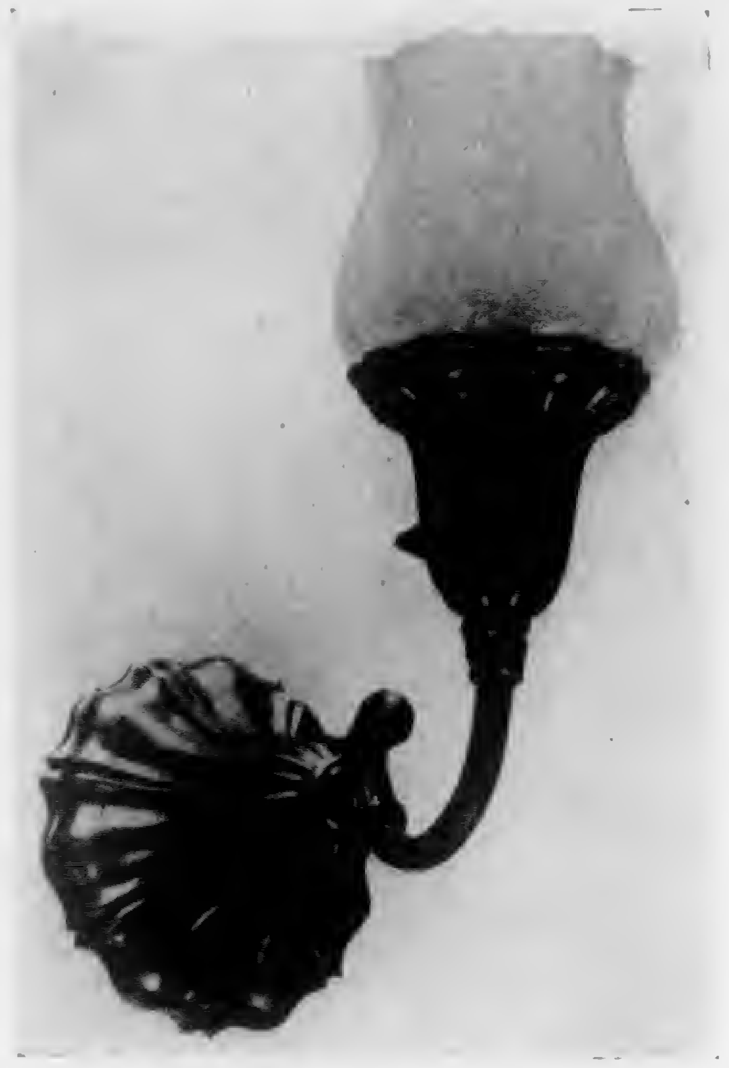

Fig. 4.

The company held, with expressed good faith in the matter, that sooner or later their clients would surely be displeased with the results along the lines to which they were adhering, to the end that, as the story goes, with the best of business friendship existing, the company finally pleaded permission to withdraw rather than perpetrate what, to its conviction, would have proved most unsatisfactory. The company refused to perform the operation, so to speak, and the opportunity of doing so passed to some more amenable concern. This company claims, however, that it has gained far more than it has lost by such procedure.

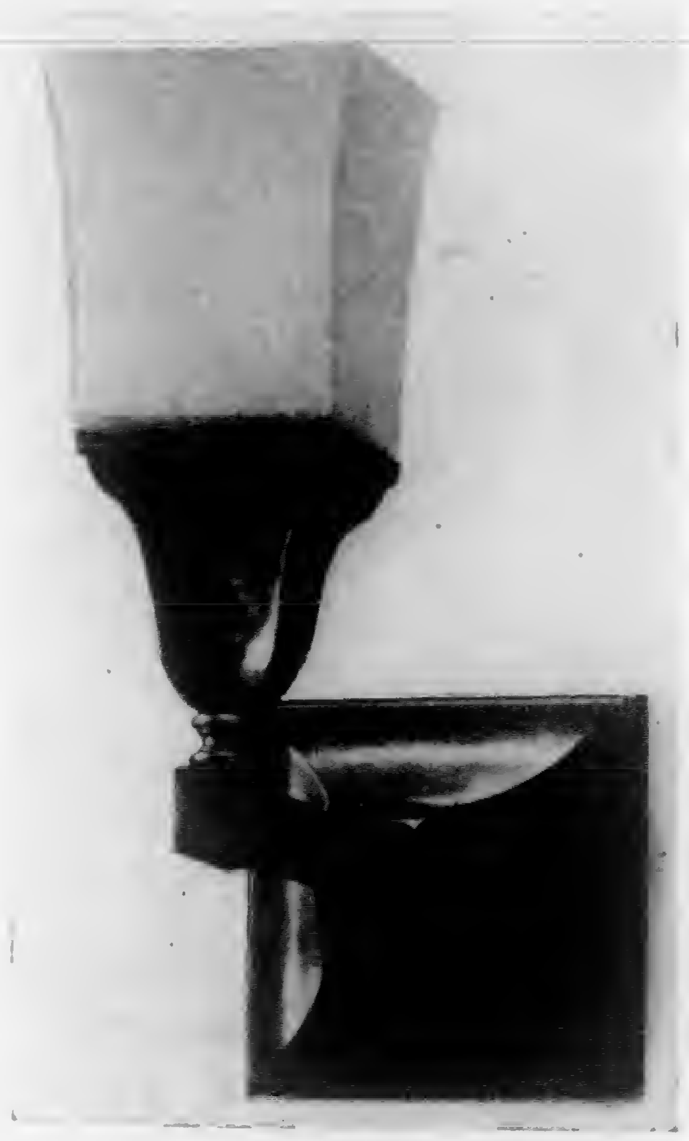

Fig. 3.

Its manager, in setting forth this position, said: "What is the use in our having a standard unless we are to stick to it? If we have a fair name and would hold it, we must protect it, mustn't we? Besides, may we not protect to the best of our knowledge the interests of our customers? That has been our custom for years and we are still doing business.

"An acquaintance of mine, for instance, recently came to me for advice. He had a pretty good house, but had come to a point where he realized that he must economize on his lighting fixtures. All well and good. I suggested that he cut his selections to the point of simplicity rather than install some pieces of elaborate design, the very weakness of which would be evident with the appropriations available. Because a piece is simple in its conception it need not necessarily show cheapness. There's nothing very remarkable about that, is there?"

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* From the Illuminating Engineer. Illustrations are photographs of Enos fixtures.

Good Fixtures

As an illustration of such work the following designs were offered as suggestive:

Fig. 1 shows a simple bent arm, with lines that follow according to the description of the designer. This design has the advantage of being harmonious in any simple room and commends itself as being that character of which one would not tire. It would look well in a house that might have no great pretensions or in one that was fairly expensive in its appointments.

Fig. 2 is a good example of the old order of lamp that has not been affected by the introduction of electricity and is strong from the standpoint of proper illumination; while still retaining the effect of an oil lamp it suitably adapts itself to modern conditions. It might well be used in the English, Colonial or Dutch style of house.

Fig. 3 is a bracket built along Colonial lines, successfully concealing the mechanical appliances necessary in the use of electricity, the arm terminating as it does in the flower-like effect which conceals the electric socket in which the glass follows the lines of the shell that holds it. This also is a piece of which one certainly would never tire and is an ornament as well as a lighting piece.

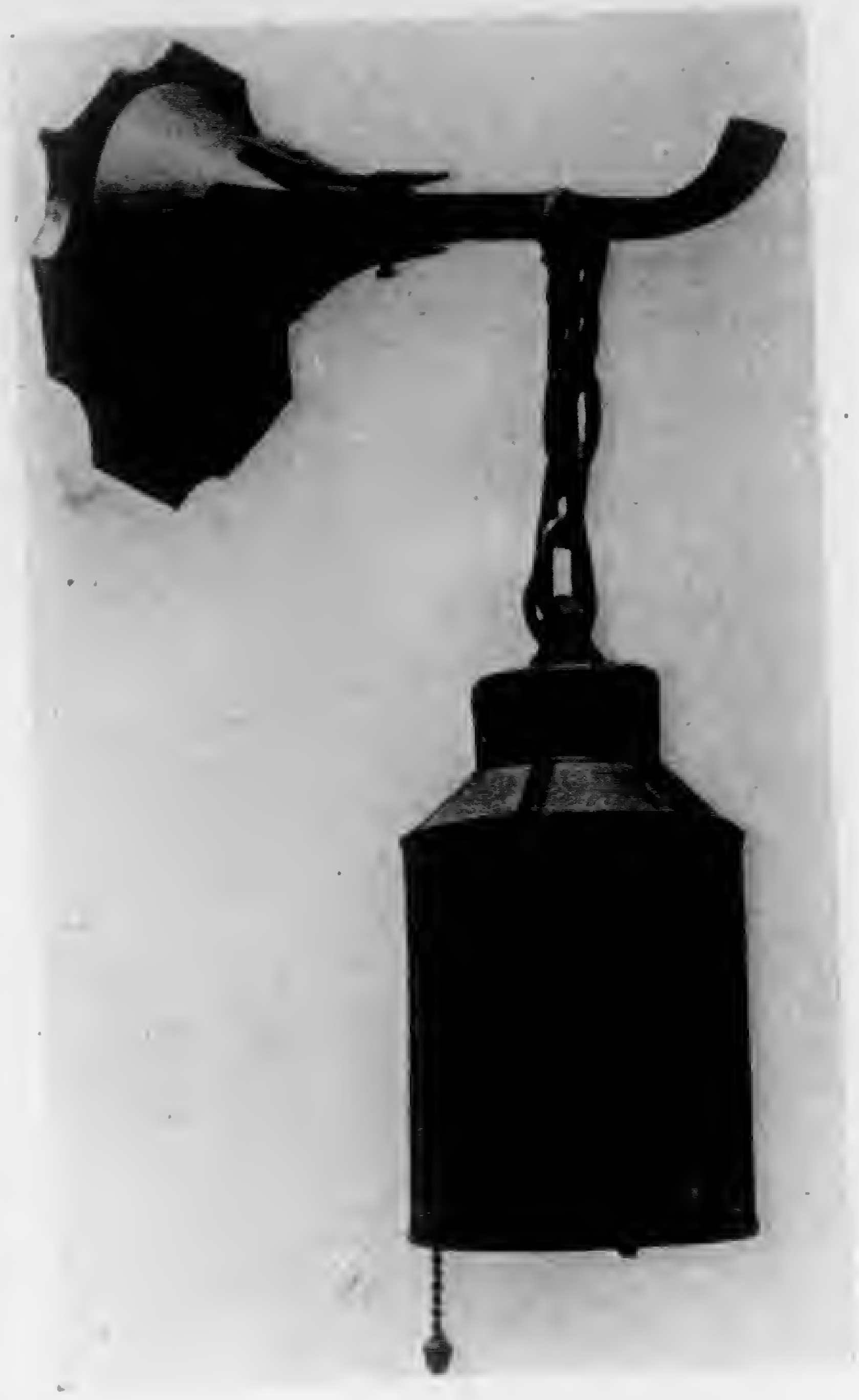


Fig. 5.

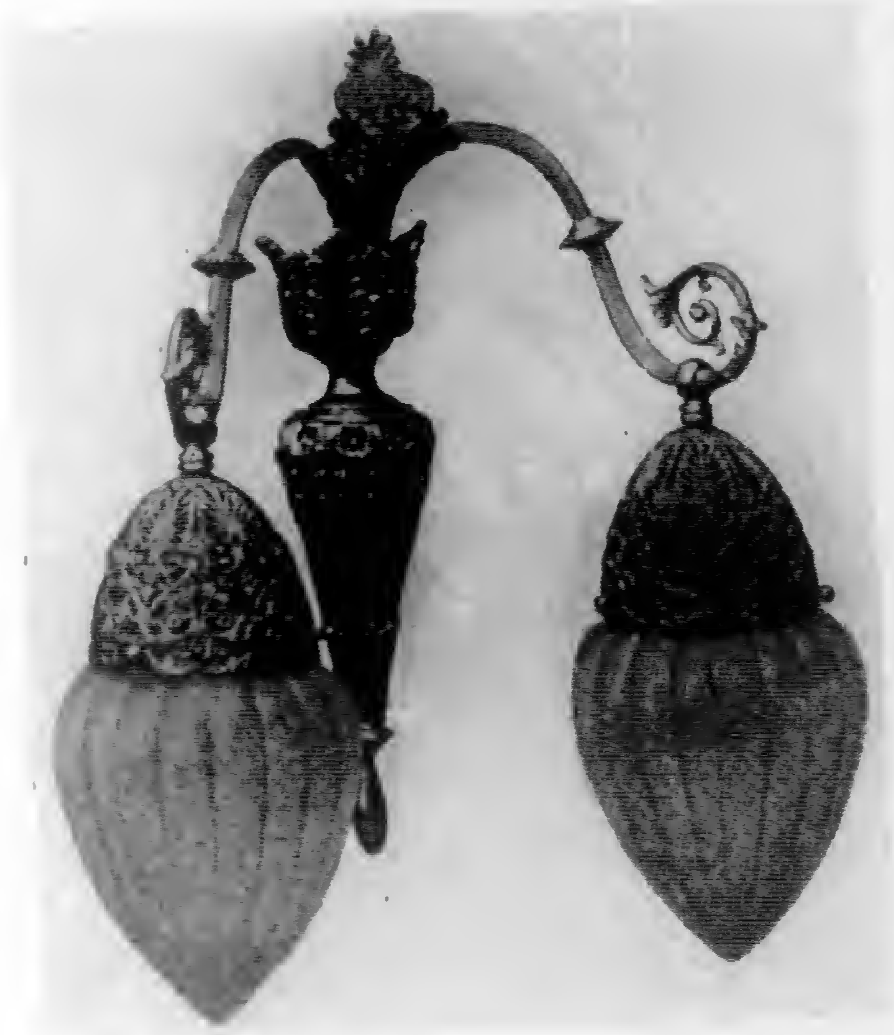


Fig. 6.

Fig. 4 shows a bracket along the lines of the new order of work. The bracket has been studied to produce harmony and, as in the other instances the ugly mechanical effects have been concealed.

Fig. 5 might be best classified as a bracket of the older order of work. Pieces of this kind might have been found in the old world castles. The charm of the design is retained even with the modernizing necessary to comply with present day lighting.

On the Contrary

In extreme contrast with the design heretofore shown, some anonymous creations indicating general weakness are submitted; by weakness is meant particularly a lack of purpose in any direction whatever and suggestive of an effort toward decoration which is unsuccessful because of glaring inconsistencies. For instance, it is noted throughout that one part at least of the fixture shows a suspicion of a motive that, even if it were well executed, is at complete variance with the other parts, they in turn bearing little if any resemblance to one another.

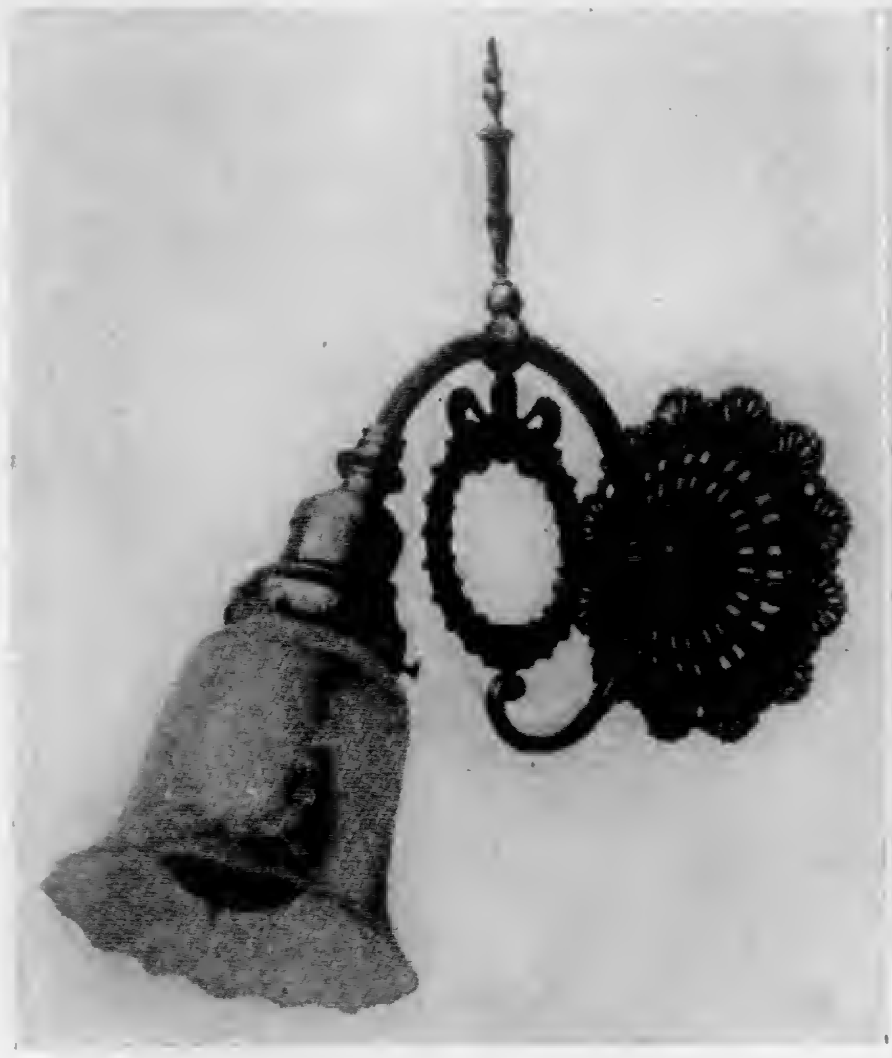


Fig. 7.

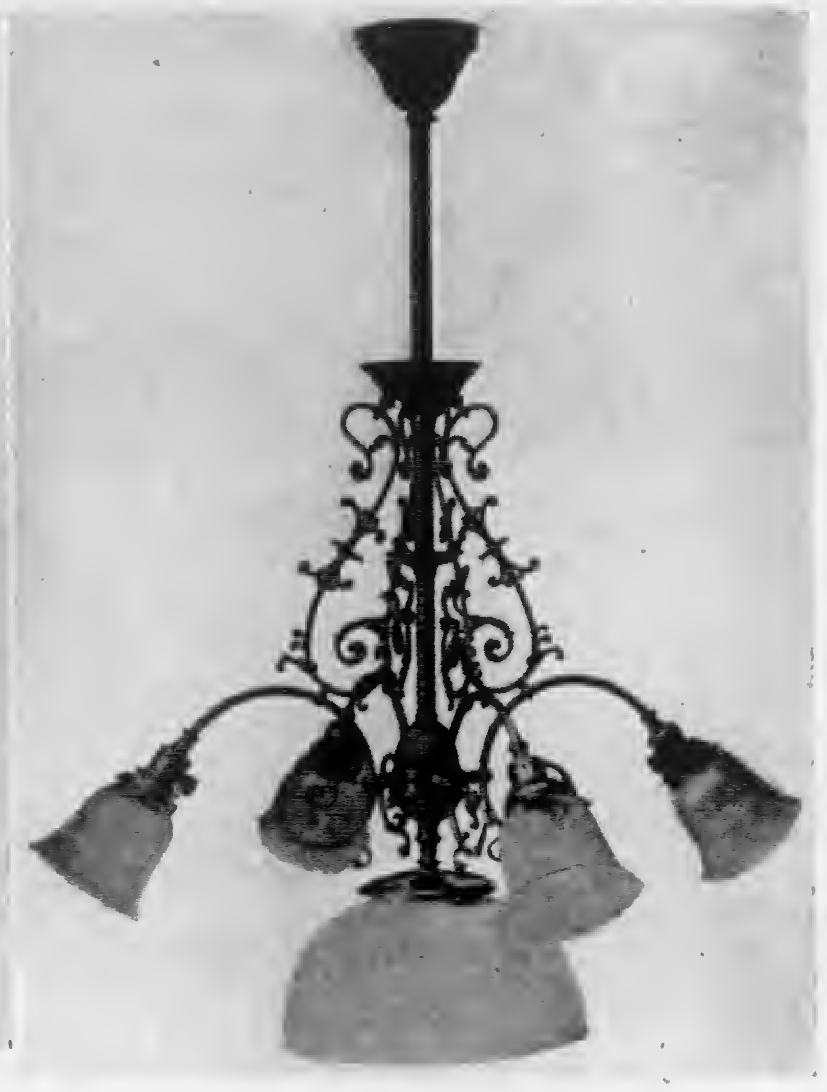


Fig. 8.

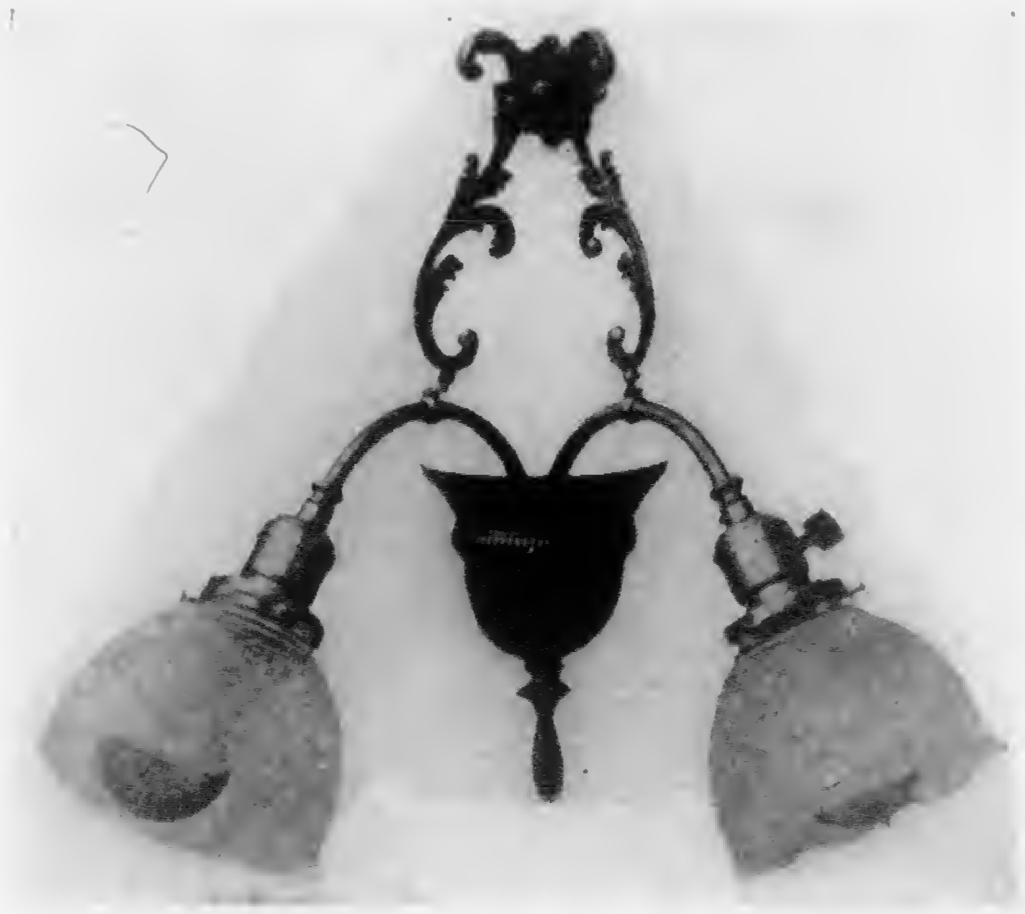


Fig. 9.

Fig. 6, for example, is a piece entirely out of proportion at its inception; no amount of alteration in the component parts in respect to design could remedy it. It belongs to no style, to no period, unless one were to take the fact of its existence for *a priori* proof that it must be placed in the motley gallery apportioned to the vaudeville of genuine artistic effort.

To be more specific, Fig. 6 has a weak back. Atlas never in his weariest moments looked more burdened than this back piece looks, supporting as its meted incubus the two immense bulbs that droop as if on the point of collapse. Even if the back were strong enough, the arms are not. In respect to the decorative effect there is again trouble: The back suggests, if it suggests anything, a French motive, while on the bulbs is a pattern that savors of the Greek of the Empire period. Of this "gilt and glitter," which only at its very best is endurable, one would surely tire, and its cost would undoubtedly be greater than a fixture that is much better from the standpoint of grace, beauty, proportion and essentially everything else that makes for good taste.

Fig. 7 offers as its most glaring fault a wreath, the excuse for whose existence would be hard to find. One can imagine the designer (or the assembler) of the fixture as being distressed at the hiatus between the chord of the arm and the "upper-cut" feature of the end beneath and, not wishing to give a prospective buyer the chance to feel that he was not getting a full return for his investment, inserted the wreath just because he happened to have it on hand.

Fig. 8 is a composition frequently seen in apartment houses, in parlors or dining-rooms, or almost any room where a general diffusion is attempted. While the illumination is effective, the piece offers such complete lack of motive and the movements are severely so feverish and hysterical that one cannot but wonder by what pressure the manufacturer was driven when he produced it.

Fig. 9 shows a tie which joins and supports the two arms, set in an inverted dinner-bell. The tie presents renaissance scrolls, the arms are plain drawn brass tubes, while the exact period of the dinner-bell receptacle is not known.

* * *

Abstract Rather that Concrete

"I don't want to do any advertising," growls the merchant when the solicitor approaches him.

"But I am sure you will soon see the advantage of having your name and firm mentioned in our paper," argues the solicitor. "Let me show you our last circulation statement, and—"

"Now, look here, young man! Can't you take no for an answer? First thing you know, I'll lose my temper, and—"

"If you do," suggested the courteous solicitor, "try our lost and found column. You're sure to get quick results."—Judge.

* * *

Wanted an Ad with His Subscription

An inquiry came into the office of a technial electrical paper, on a postal card, from a little fellow over in Flatbush, asking for a sample copy and the subscription price.

They looked him up and found that he made a line of specialties for the electrical trade, so an advertising solicitor went over to see him, thinking that perhaps there might be some advertising back of it.

He told the man his story, gave him a sample copy and told him the subscription price was $3.00 a year.

The man looked the paper all over, sized up the ads and came back at the solicitor with the questions, "How do you work this thing anyway? If I subscribe to the paper how big an ad do I get? I see some of the ads are small and some are large. What I want to know is, how big a one do I get with my subscription?"

7

Interior Decoration

The Biedermeier Style

Arranged by C. WALTER TOZER

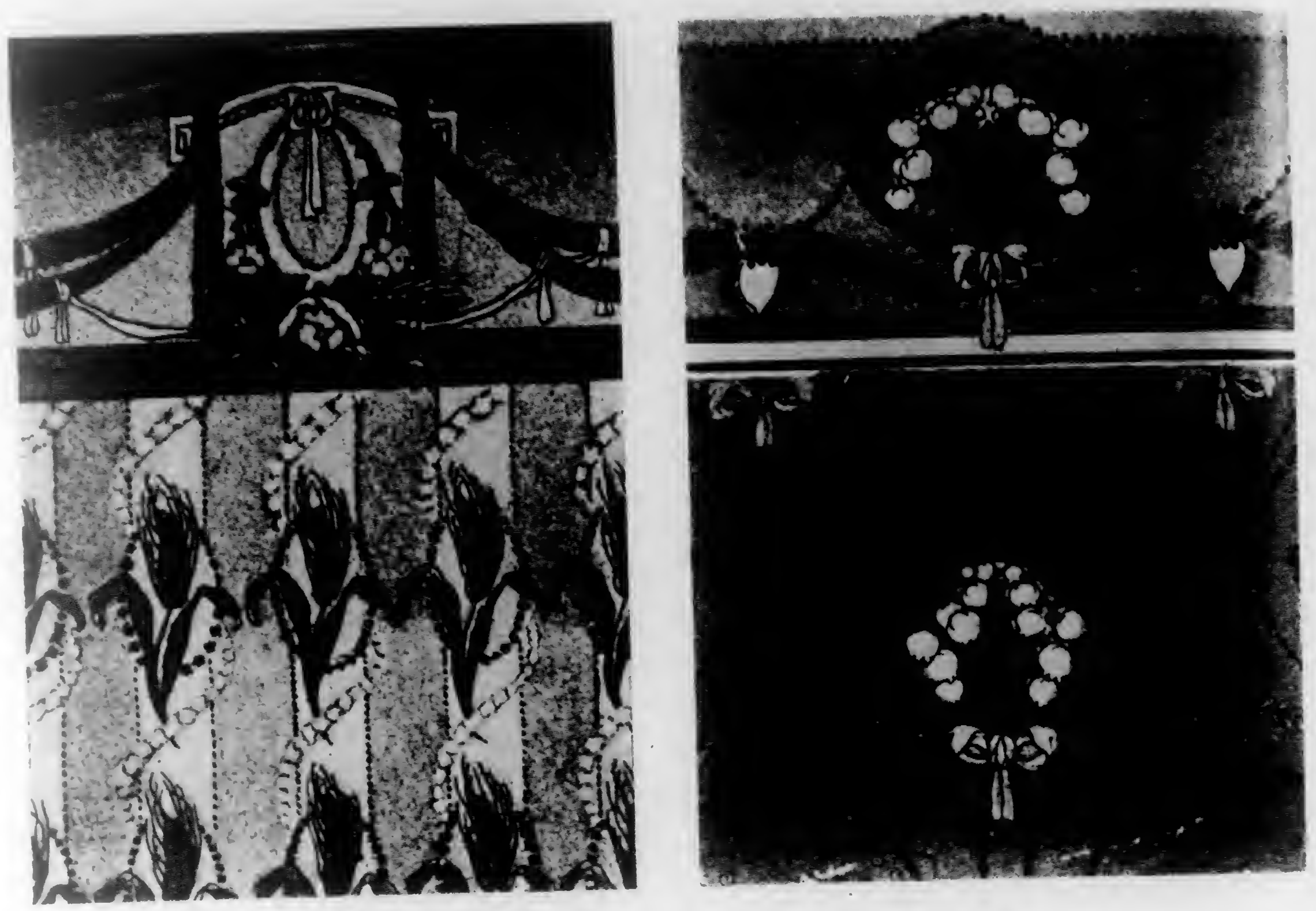
THIS is a style having great popularity in Europe and has already entered America. It derives its name from a character in a series of illustrations in a very sedate German comic paper of a few years ago. He was a middle class German citizen, with money and small taste. It is said of him that he very much desired the introduction of a new style in decoration and offered a large prize for the production of the "new style." He was a good citizen but very weak on art. In fact was the sort of man who would buy a collection of funeral urns, we'll say, and perch them upon the posts of his garden wall; then place a cast iron deer on his lawn, and endeavor to make his 50 x 100 yard a miniature imitation of the park of Versailles.

In America, at the present time, it is a "novelty", and in whatever line it may appear, it shows a desire to offer the "newest" thing rather than a necessity of supplying an insistent demand.

The Biedermeier style is just a "pretty" style, and in classifying it, as to spirit and feeling, it would be put in the same class as the Dresden china, the old Dolly Varden gowns, and such things as the old bisque figures of shepherdesses and the "poke" bonnets of olden days.

This is just what Biedermeier is. It doesn't pretend to have "meaning" nor to express the soul throbs of an ambitious artist. It is simply "pretty" and it is satisfied to be so. Surely it must be admitted that it is decidedly charming in its simple and unambitious way. It doesn't pretend to be much and it is all it pretends to be.

Whatever we may think of the Biedermeier style as a whole there is no question that in some of its phases it well fills for the moment the



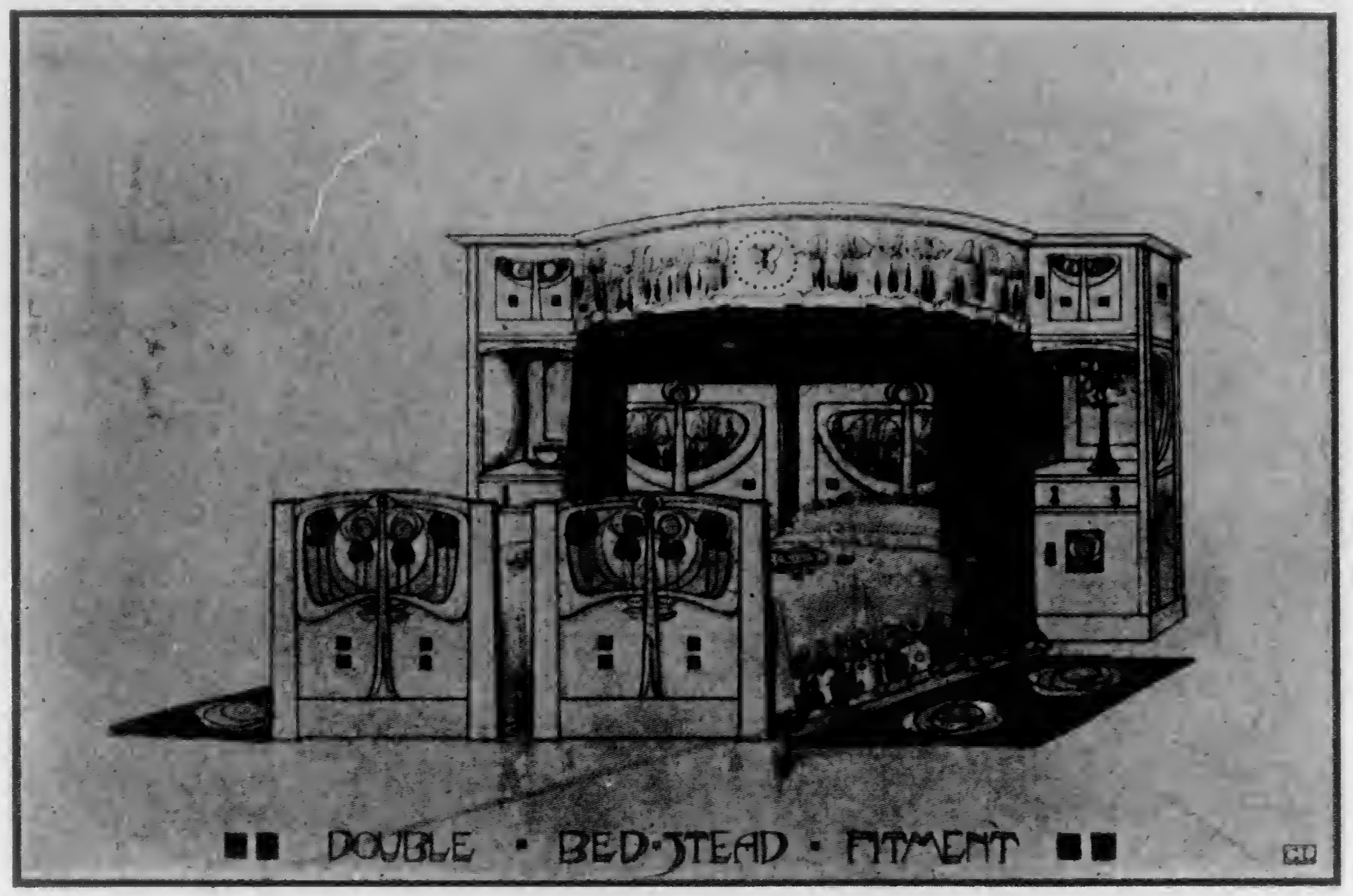
Biedermeier Border Designs. Colorings all in Soft Pastel Tones

desire for novelty that is constantly urging the designer to produce something new. It will never have a great vogue in this country as a complete room decoration, because it is not a complete style. It is not based on any great constructive idea, but is merely decoration, and decoration without any great artistic merit.

The Empire style was the last great period style in France. Germany had no styles but the French. England's decorative art rather thinned out with the Georgian. After the Empire every thing became ordinary and tame; there were no more "grand" styles, imperial or royal. Herr Biedermeier came into his own, waxed rich and opulent, retired and spent his money. Art was no longer aimed to hit the taste of kings or emperors; it was aimed to please the taste, or lack of taste, in Herr Biedermeier, and just as he made his little lawn a reduced and domesticated park of Versailles, so the designers created a reduced and domesticated Empire style to please him.

The Biedermeier style, in its present revival, appeals, not only because of its simple prettiness, but because it is in a way "old fashioned."

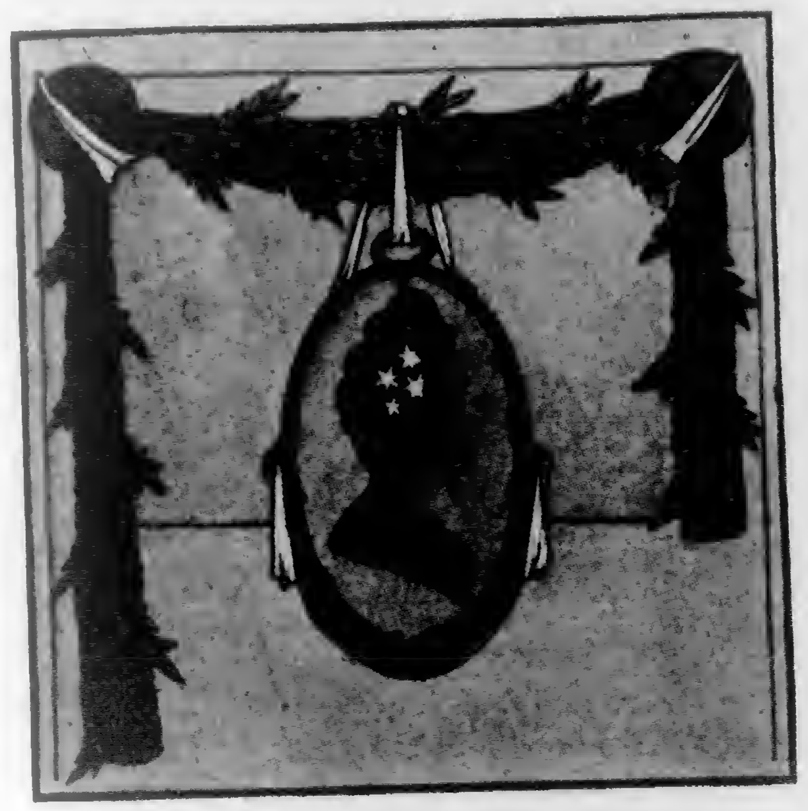
In design the new Biedermeir is freely treated. At its fullest it represented only a thinned down Empire style, and the Empire style itself was not a great style. It was merely a quasi-classic thrown together, as may be said, to fill the need of something new and showy enough for an imperial court, and conceived and carried out by men of no great originating genius. The Biedermeier is no more than based upon the classic styles that gave rise to the Empire, and the designer does much as he pleases so long as he keeps the designs gentle, sweet and mild. In color the new Biedermeier is also gentle. It avoids strong hues and violent contrasts; pastel tones are used, and the design is outlined and then filled in with flat color; no shading; no modeling. Only one strong note ever enters and that is solid black. In Biedermeier's day the silhouette portrait—a profile cut out of white paper and mounted on a black ground—was the crayon portrait of that day. It was conspicuous in the room's fitments just as the cheap crayon portrait of today. The silhouette made a strong contrasting note in the soft pastel tones of the room. The Biedermeier style, while never joyous, was cheerful.



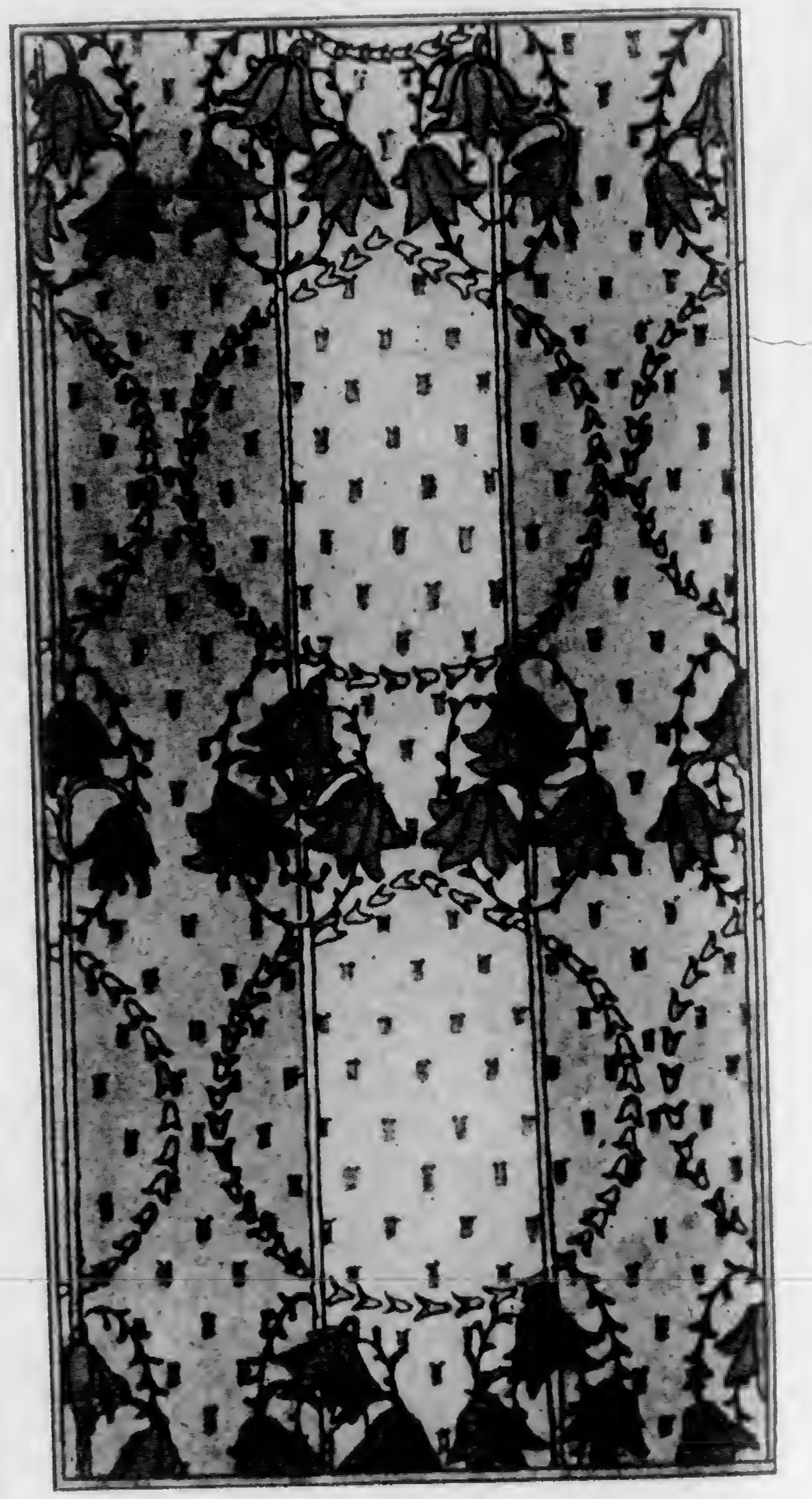
The average man does not care to live with decorations that he cannot understand, and to him the Biedermeier style is more satisfactory than l'art nouveau, or than the "grand" style of courts and palaces. Like Herr Biedermeier, he likes something "neat and refined, but not gaudy", and excellent as "high art" is, the population of the world is largely made up of "citizens".

The Biedermeier, as a whole, will not be very popular in America for the simple reason that it will be impossible to secure materials for the decoration of an entire room. We will never have Biedermeier furniture in this country, designed especially to be in harmony with the other fitments, because it would not pay the manufacturer. Individual examples of Biedermeier upholstery goods and curtains and wall papers we can now have from either importers or American factories, and they are very pretty, but they will remain, as they now are, to be used because they are admirable, and not because the decorator will use them to fit up entire rooms in perfectly harmonious Biedermeier period style.

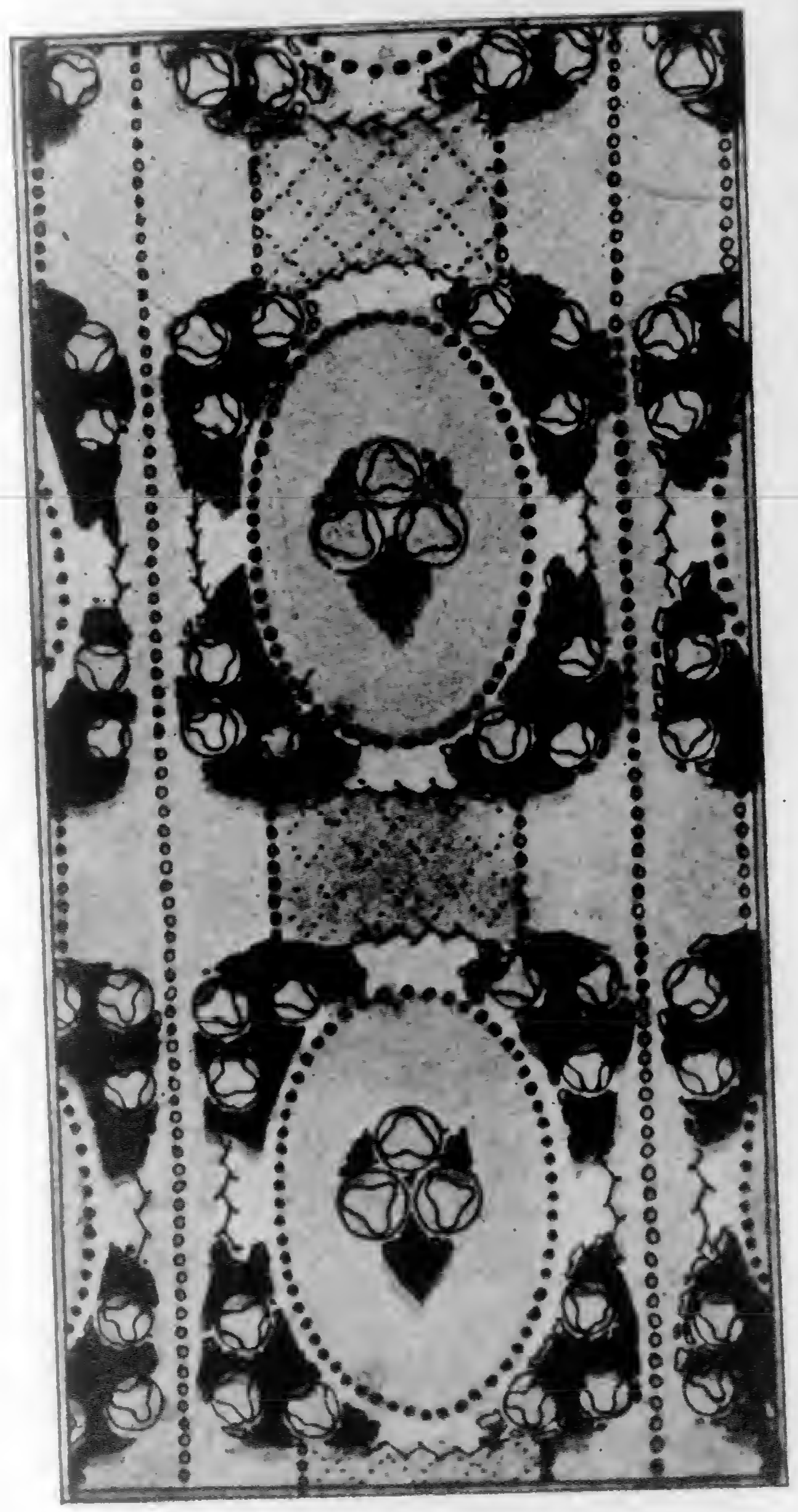
The new wall paper lines show quite a number of Biedermeier patterns and no doubt that during the next few years strict floral designs will be replaced to a large degree by the conventionalized floral treatment as seen in this style. We are illustrating this article with a number of cuts showing this style in wall paper and furniture designs and also some characteristic details.



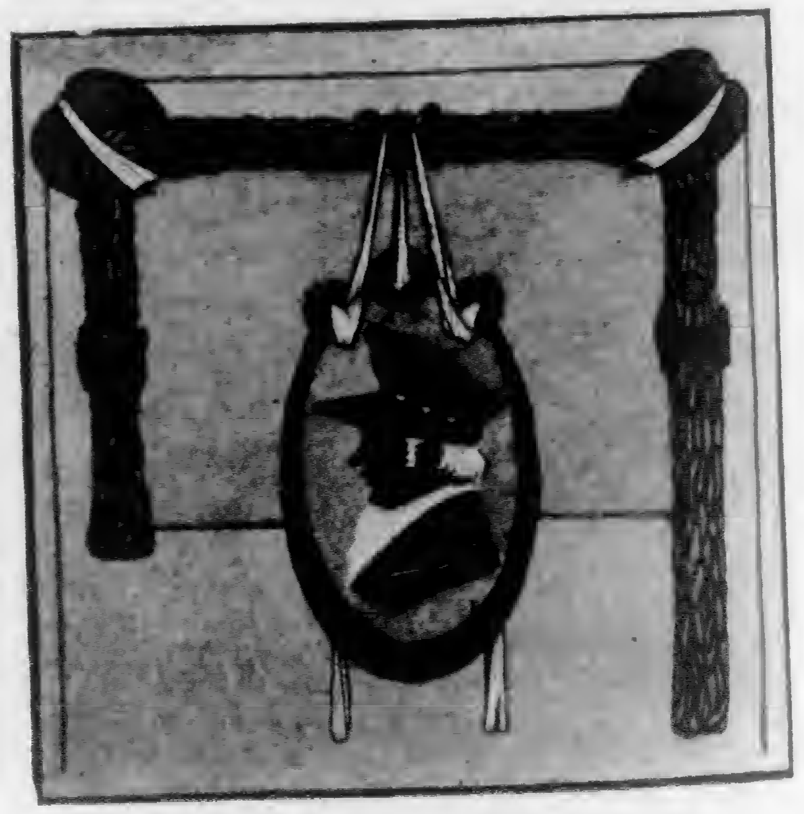
A Biedermeier Pillow Top



Biedermeier. Alternate White and Dull Rose Stripes Sky Blue Flowers. Wreaths and Dots in Black



Biedermeier. Center Stripe Cream. Side Stripes Gray. Medallions Gray. Roses Pink. Leaves Light Green



Another Biedermeier Pillow Top

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

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*Executive Committee.

Next Convention at Chicago, Illinois

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Trustees......................Octavus Morgan, Sumner P. Hunt, Wm. S. Hebbard

Sacramento's New Hotel

Architect Charles F. Whittlesey of Los Angeles and San Francisco is at work on plans for a hotel to be erected in Sacramento by the Sacramento Hotel Committee. The plans call for a $500,000 building to be erected at the corner of Tenth and K Streets, with a facade of brown tile. It will be of reinforced concrete, fireproof construction. Features of the hotel will be a unique roof garden and an auditorium seating 400 persons. Alden Anderson is president of the company.

Tharp Succeeds Shea

The San Francisco Board of Public Works has appointed Newton Tharp city architect to succeed William D. Shea. His salary is to be $4000 a year which is calculated to save the city from $100,000 to $200,000 in fees that would have gone to Shea had his services been continued. Tharp will now prepare plans and act as superintendent of all new municipal buildings except the school houses already designed under Shea's supervision. For preparing the plans of these Shea will receive 5 per cent of the cost of the buildings but he will not draw any money for the supervision of the structures, that task going to the new incumbent, Mr. Tharp.

Architectural Club's Educational Classes

The San Francisco Architectural Club announces several educational classes which will be maintained during the fall and winter at the club rooms, 568 Golden Gate avenue. H. W. Seawell, professor of drawing at the University of California, has assumed charge of a class in life drawing and water-color rendering, the former class meeting every Tuesday evening and the latter every Saturday afternoon. A class in structural engineering has also been organized with Charles Derleth as instructor. Meetings are held every Thursday evening.

Two Chapters Elect Officers

Annual meetings of both the San Francisco and Los Angeles Chapters, American Institute of Architects, were held in October, banquets preceding the business meeting.

San Francisco Chapter elected the following officers: President, Albert Pissis; vice-president, William Mooser; secretary and treasurer, Sylvain Schnaittacher; trustees, Henry A. Schulze and William Curlett.

The new officers of Los Angeles Chapter are: President, Carroll H. Brown; vice-president, Myron Hunt; treasurer, August Wackerbarth; secretary, Fernand Parmentier.

Portland Club to Hold Exhibit

The recently organized Portland Architectural Club is arranging for an architectural exhibit to be held early in January. "To make this exhibit a success and to lay the foundation forfuture annual exhibits", says an exchange, "is demanding much time and effort on the part of the promotors of the idea, and it is but common courtesy that every architect in the whole northwestern territory should give the matter immediate consideration and if possible arrange to be represented there. Out of a successful exhibit at Portland should grow the establishment of a northwestern circuit or league, including the principal cities, where the works could be shown and every one interested given an opportunity to profit thereby. Furthermore, it may be expected that such an arrangement would attract the attention of eastern architects and exhibits held in the large centers of the east might be secured, in part or in whole, for the northwestern circuit."

Rejects Hollow Tile

The Los Angeles City Council has declined to amend the building ordinance by adding a provision permitting hollow tile blocks to be used for outer walls of buildings inside the fire limits.

At a recent meeting of the Southern California Chapter of the American Institute of Architects resolutions were adopted favoring the use of the material and asking the council to modify the building laws so as to permit the use of hollow tile blocks for walls of buildings not more than thirty feet in height.

Building Inspector Backus made a careful study of the uses and abuses of hollow tile blocks, and reported to the Council in substance as follows:

In my estimation it would be extremely unwise to allow the use of hollow tile blocks for exterior or interior weight-bearing walls within the fire limits, for the reason that it has been demonstrated that said tile is such an excellent non-conductor that the outer wall or shell of the tile will become red hot when subjected to an intense heat, while the interior wall of the tile is comparatively cool, the result is that the outer shell of tile (owing to expansion) will break away from the connecting web, after which a wall of such tile carrying any considerable load would collapse by buckling.

In the event of a fire in a building of ordinary construction, which might be located in close proximity to a structure built of hollow tile, there would be grave danger that the burning timbers falling against such a structure would penetrate the wall and thus set fire to the contents of said hollow tile building. Even an ordinary blow will fracture the tile in such a wall, and the backing of a heavy wagon against the building would be liable to cause quite a break, to say nothing of the opportunities offered to a mischievious boy or any one else armed with a heavy hammer, who could with very little effort break through the walls of such a structure.

As a result of this report the city authorities have declined to allow the proposed amendment.

Cement Users' Convention

The fourth annual convention of the National Association of Cement Users will open January 20, at 10 o'clock in the morning, and will close at 11 o'clock p. m., January 25, 1908, in the old Sixty-fifth Regiment Armory, Broadway and Potter Streets, Buffalo, N. Y.

Cement Sidewalks

La Grande, Oregon.

To the Editor: Will you kindly advise me as to the best method to pursue in putting a new top coat on a cement sidewalk.

J. L. MARS.

In reply to your inquiry we would suggest the following plan of procedure:

(1). Roughen the surface of the old concrete, making frequent small cavities in the surface and then thoroughly clean this surface.

(2). A cement grout should then be applied but not in the ordinary way of wetting the old concrete and sprinkling dry cement over. It should be a mixture of cement and water and thoroughly swept or mopped in, say with a broom.

(3). The top coat should then be laid and thoroughly troweled down. The operation of applying a top coat is frequently unsatisfactory, but by following the above instructions we believe you will get satisfactory results. [Ed.]

Comparative Cost of Materials in San Francisco, Chicago and New York

(Compiled by the California Promotion Committee.)

Materials.	San Francisco.
Common brick, per M	$ 8.75 to $10.00
Pressed brick	25.00 to 45.00
Cement, local	1.75 to 2.00
Cement, foreign	2.00 to 3.25
Sand, per load	1.00 to 1.50
Gravel, per load	1.40 to 3.50
Rock, per load	1.75 to 3.50
Lime, per barrel	90 to 1.10
Excavating, cubic yard	75 to 2.50
Steel, set up	58.00 to 95.00
Lumber	15.00 to 40.00

Materials.	Chicago.
Common brick, per M	$ 7.00 to $ 8.00
Pressed brick	21.00 to 32.00
Cement, local	2.00
Cement, foreign	3.00
Sand, per load	1.90
Gravel, per load	3.50
Rock, per load	3.50
Lime, per barrel	1.10
Excavating, cubic yard	2.50
Steel, set up	75.00
Lumber	40.00

Materials.	New York.
Common brick, per M	$ 7.00 to $10.50
Pressed brick	23.00 to 32.00
Cement, local	1.35 to 2.00
Cement, foreign	2.50
Sand, per load	1.80 to 2.00
Gravel, per load	3.50
Rock, per load	3.50 to 4.50
Lime, per barrel	90 to 1.10
Excavating, cubic yard	1.10 to 2.50
Steel, set up	58.00 to 75.00
Lumber	22.00 to 40.00

The following figures show the average wages paid in San Francisco and New York, Chicago wages being the same as New York:

Trade.	San Francisco.	New York.
Excavators	$2.50	$1.95
Concrete workers	4.00	2.80
Bricklayers	7.00	5.60
Carpenters	5.00	5.00
Plasterers	7.00	5.50
Electricians	5.00	4.00
Plumbers	6.00	5.00
Plumbers' helpers, per week	20.00	12.00
Painters	5.00	4.00
Hod carriers for brick	4.00	3.00
Hod carriers for plasterers	5.00	3.25
Cement finishers	6.00	4.40
Steamfitters	6.00	5.00
Steamfitters' helpers	3.00	3.00
Housesmiths	5.00	4.50
Marble setters	5.00	5.50
Marble setters' helpers	3.00	3.00
Bridgemen	5.00	4.50
Granite setters	5.50	5.50

Architect Albright and the San Diego School Board

Harrison Albright, a well-known specialist in reinforced concrete architecture in Southern California, threatens to sue the San Diego Board of Education for the full amount of his commission as architect of a proposed school building. It seems that at the written request of the board Mr. Albright submitted designs for a building and at a subsequent meeting was selected as the architect and received notification in writing to that effect. He then proceeded with the plans and submitted them to the board. On receipt of bids the board concluded they did not want a concrete building or Mr. Albright as architect. Unless the board retracts, a suit for damages and full commission will result. The Board of Education has sought the legal opinion of the District Attorney who has decided that the Board's action in selecting the plans of an architect without first advertising about what was desired in the way of plans, giving the cost of the building and the premium to be paid the architect for his services, was illegal and consequently the officials are not legally bound to pay Mr. Albright his commission. This is another strong argument against the much abused competition scheme as carried on by city and county officials and which architects are fast learning to keep out of until such time as they can be properly and fairly conducted.

Twelve-Story Office Building

Architect John Cotter Pelton of San Francisco has completed plans for Armaund Cailleau, for a twelve-story building to be erected on the corner of Grant Avenue and Sutter Street, San Francisco. The building is to be known as the Tower Building and will cost $150,000. The lot is 40x40 feet. The building will be Class A, and will be built of steel. The outside will be finished in white stone.

Group of Concrete Buildings

Rankin, Kellogg & Crane, architects, of Philadelphia, Pa., are preparing plans for a group of reinforced concrete buildings to be erected in San Francisco for the Transport Service of the Army Department. The buildings to be erected are six three-story storehouses, 60x200 feet each, a three-story and basement office building, 50x150 feet, a number of houses for officers, and a system of docks. The cost will be $1,250,000.

The National Association of Manufacturers of Sand-Lime Products will meet in annual convention in the German room of the Chittenden Hotel, Columbus, Ohio, Wednesday, Thursday and Friday, December 4th, 5th and 6th.

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LUMBER MEN AND INCREASED FREIGHT RATES

Keen interest is being taken, especially among the lumber men, in a proposed amendment to the Interstate Commerce law, the object of which is to prevent any sudden change in interstate freight rates without first giving the shipper an opportunity to be heard.

Under the present procedure, railroad companies simply file their tariffs, which become effective in thirty days. If the shippers feel aggrieved, they then appeal to the Interstate Commerce Commission and the Courts. In order to overcome this unfortunate condition an amendment to the present Interstate Commerce law is essential.

Reasonable railroad regulation is the imperative demand of the hour. The subject is occupying the best minds of the nation. Upon its satisfactory solution depends the permanent prosperity of every State in the Union. It would seem as if we were drifting either toward government ownership or an enlargement of the powers of the Interstate Commerce Commission in the matter of fixing and determining equitable rates of transportation.

Let Congress pass an amendment to the present Interstate Commerce Commission Act requiring all railroads to not only file their proposed freight tariffs with the Commission, but in addition must secure the consent of the Interstate Commerce Commission before the rates can become effective. In addition to filing any proposed change in their freight tariffs, the railroad companies should be compelled by law to advise the shippers tributary to their lines, say 60 or 90 days in advance, that an application would be made to the Interstate Commerce Commission asking for a hearing on the question of a change of rate.

If after a hearing and no valid objection was urged, the rate would become effective. If the Commission decided adversely to the application of the railroad, its right of appeal to the courts would still remain.

On the other hand, if the shippers felt aggrieved at the granting of the railroad's application to advance rates, the right of appeal to the courts would be safeguarded, but the rate in controversy would stay in effect until the courts had finally passed upon the appeal.

It is a reasonable presumption to assume that where a rate has been in effect for several years, it be fairly regarded as a renumerative rate to a railroad.

A shipper can accommodate himself to practically any rate, if the rate be a permanent one.

The need of some legislation along this line is brought forcibly to mind by the action of the railroad companies in increasing the Eastern rate on lumber 10 cents per 100 pounds, which is equivalent to about $3.30 per thousand feet.

This increase in freight rate which became effective November first, restricts the market for Pacific Coast lumber to a very marked extent, thereby reducing the enormous volume of money which has been placed in circulation through this one mighty industry alone.

FIRE RESISTANCE OF CONCRETE

A committee from the Royal Institution of British architects recently investigated the fireproof qualities of reinforced concrete and its report, which was adopted by the Institute, is so replete with gratifying conclusions, that we feel compelled to pay more than passing notice to the various points advanced. It may be taken as authoritative, declares the report, that the strongest concretes, from a fire-resisting point of view, are those in which coke-breeze, cinders, or slag form the aggregate, and that the covering over the metal reinforcement should be at least 1in. thick in floor slabs, and 1½in. thick in beams. Another important note as affecting designs is that which states that all angles should be rounded or splayed in order to prevent spalling off under heat, and that there shall be means of connection in the form of loose stirrups, bent-up rods, etc., between the metal in the lower sides of beams and slabs, which suffer most in case of injury, and the upper or compressional sides, which are not usually injured. Fortunately, this corresponds with what theory requires for the resistance of shearing stress.

Another highly commendable feature of the report is the insistence upon the requirements of specifications adopted by the British Engineering Standards Committee, both with regard to cement and steel; but it is, we think, rather a pity that inch-pound units should have been adopted throughout instead of foot-ton units, with which architects are more familiar.

PROSPECTS BRIGHT FOR THE FUTURE

The splendid victory of the good government forces in San Francisco is already being felt in a return of confidence on the part of the property owners and the money lender. The day following the election, building permits representing an immediate outlay of more than $2,000,000 were issued. Since then, in spite of the temporary stringency in the money market, additional permits have been granted averaging several thousand dollars a day. Architects report that many jobs which were held in abeyance before election are now going ahead and it looks now as if the new year would see all previous records smashed in point of actual new construction work. And why not? San Francisco is the only city in the country not overbuilt. The construction work must come if the city is to hold its position as the great metropolis of the Pacific Coast. With money easier and confidence restored by the advent of an honest city administration, what's to hinder our advancement?

The Publisher's Corner

In New Quarters

Chubbuck and Harris, sales agents for lime, cement, plaster, metal lath, pressed brick, enameled brick, etc., have moved from the Atlas building to more commodious quarters in the building at the corner of Third and Mission streets. The number is 710 Mission street. The firm has the ground floor which is used as a sample and salesroom while immediately above this room and reached by a private staircase are the executive offices. It will be recalled that Chubbuck and Harris were one of the first firms to resume operations after the big fire, finding quarters in the then partly destroyed Atlas building. As a result of "getting in on the ground floor", to use a trite maxim, the firm has prospered—a fact that is apparent by its splendid new quarters.

A Successful Plumber

Probably no single plumbing concern in California has met with greater success than R. C. Smoot of San Mateo. The best work in San Mateo county, and there has been none better on the Coast, has gone to Smoot in competition with San Francisco and other concerns. The contracts have ranged in importance from $10,000 to $350,000. Following is a list of the buildings for which Mr. Smoot has done the plumbing, heating and sheet metal work, including, also, work now in progress: Peninsula Hotel, W. H. Crocker mansion, Smith's garage, Hickie garage, Lewis residence, Cotton residence, Turner residence, J. B. Cuthburt residence, San Mateo Polo Club house, Boldeman and Abrams residences, Mission office building and Brown office building, besides a dozen smaller residences costing from $3,000 to $6,000 each.

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Fireproof Materials

The Western Fireproof Material Company is now located in Suite 15, No. 42 Market street. The company's old quarters were on Steuart street, San Francisco. This company handles such fireproof material as basalt rock, cement, steel and cement for finishing imitation sandstone.

A New Fireproof Warehouse

A Willkomm, the Pacific Coast agent for Toch Bros. of New York, the Asbestolith Manufacturing Company, and other Eastern houses dealing in fireproof building specialties, has built himself a warehouse on Tehama street, near Third, San Francisco, to store his stock of R. I. W. Damp-Resisting Paint, Asbestolith fireproof flooring, etc., and at the same time to show the public what he can do with his materials.

The warehouse is absolutely fireproof. It is built of Mr. Willkomm's Asbestos-Cement Lumber (sometimes called Durability Slate), which material is a great improvement over corrugated iron, being attractive in appearance, free from a tendency to rust or to spring leaks. The walls of the building are covered with the heavier grade of Asbestos-Cement, the kind used for wainscoting (3-16 inch thick), while the roofing slates are the lighter grade (1/8 inch thick). These shingles are applied French method, which is really the most economical way, allowing only the minimum of waste.

The windows are types of the Lupton Fireproof window, which has been approved by the National Board of Fire Underwriters, and of the Atkinson Tilting Window, a local device which is proving popular.

The office section of this warehouse is finished with a metal ceiling and wainscoting of attractive pattern (also representing another agency of Mr. Willkomm's). The outside noise is well deadened by Linofelt sound-deafener placed in the walls, and the floor is a sample of Asbestolith in various colors, showing buff, white, terra cotta and black.

"Of course it's fireproof. It's built entirely of my own materials. I practice what I preach by using them," that's what the owner says.

Fireproof warehouses are certainly needed in San Francisco, and the public that wishes to avoid the ugly corrugated iron buildings had better go to 149-151 Tehama street and look at the Willkomm warehouse.

Portable Industrial Railways

"Portable Industrial Railways," is the name of an exceedingly attractive new catalogue, or rather booklet, just issued by the Arthur Koppel Company. This concern, as is well known, is a firm believer in the liberal use of printer's ink and it attributes much of its marvelous success to judicious advertising. Catalogue No. 227, as it is called, is replete with interesting information about the company's goods and some handsome half-tone illustrations are shown of various jobs on which the Koppel gilt-edged system of transportation is used. The book contains twenty-four pages and the San Farncisco manager, whose office is in the Chronicle building, will be pleased to mail readers of this magazine a copy upon receipt of request.

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Wax-lac—a Modern Wood Finish

Wax-lac is the name of a highly artistic and modern finish for furniture and interior woodwork. The name is a catchy one and easy for architects to remember when writing their specifications. It is made by the Detroit White Lead Works and is handled in San Francisco exclusively by the Pacific Paint and Varnish Company. This firm has acted as the Pacific Coast distributers for the Detroit White Lead Works and the Detroit Varnish Company for little more than a year and its success has been almost phenomenal.

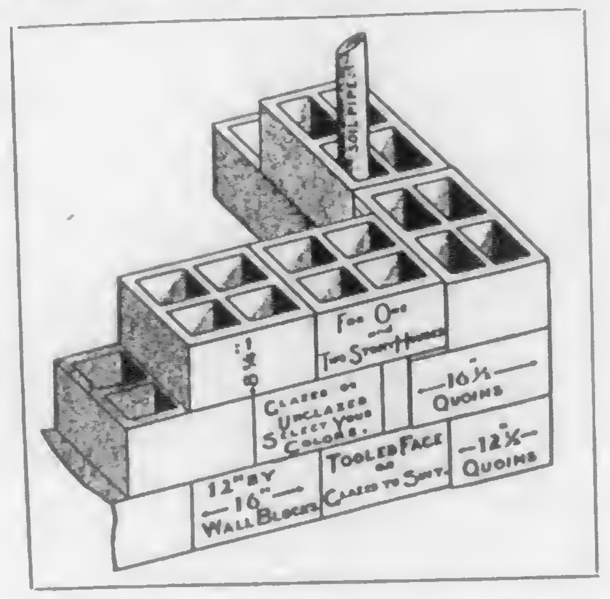
The present salesrooms and display quarters at 549 Howard street, San Francisco, thought to be amply large when the company first began business, are now somewhat crowded on account of the increased business, and Manager Cunningham has wisely secured an option on larger quarters, not far from Market street, which will be occupied as soon as made ready for occupancy. The management has made friends in its dealings with the trade, its policy of filling orders promptly and being accommodating having brought the company many patrons.

Persons who care for artistic homes or office appointments will appreciate the beautiful effects that can be produced with Wax-lac. It does not raise the grain of the wood and it leaves no disagreeable odor. Wax-lac is intended for new work only. It produces almost equally artistic effects on all woods, hard or soft, that have an open grain. It produces, by one application, a handsome wax-like finish, staining the wood any desired shade at the same time.

Roger's Klenzer is also carried by the Pacific Paint Company. It is a chemically pure preparation from which a suds can be made that will clean anything from a dirty floor to fine lace curtains. As a saver of domestic drudgery it is said to be without an equal.

Among the residences painted by the firm of Rhyman & Love of Los Angeles, for Hunt & Eager, architects, are the Richard Lacy home, the William Lacy home and the house of William Burk in Berkeley Square, Los Angeles. The work turned out by this firm is of the very highest grade.

The executive offices of E. G. Judah, general representative in Southern California of the Paraffine Paint Co., have been removed to Rooms 516-517 Security building, Fifth and Spring streets, Los Angeles.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This well-known firm, manufacturers of and dealers in Surveying Instruments, Drawing Materials and Measuring Tapes, has re-established their San Francisco Branch, and now occupy their splendid new five-story building at 48 and 50 Second street, which has been designed and built for their exclusive use. Every convenience has been considered and as a result it may be truthfully said, they have, indeed, a model establishment. The building has been constructed with special regard to the needs of their business, and nothing has been left out that would assist in giving quick and satisfactory service to their patrons.

The salesrooms occupy the ground floor which is perfectly lighted, and where the great variety of their goods are displayed in attractive and especially designed wall and floor show cases, cabinets and racks, which afford a customer the opportunity of making his selections, with the greatest satisfaction, as a comparison may readily be made of the different styles and qualities of any particular class of goods. A special feature is the sheet paper cabinet which is arranged so as to contain each size and style of paper in a separate compartment, giving a view and easy access to each, without reference to the usual small sample book which is most unsatisfactory to the purchaser.

There are separate wall bins for each kind and width of roll, drawing, detail, tracing, cross section and profile papers, tracing cloths, etc., so arranged as to be readily selected and measured automatically on a table which is provided at one end with an automatic measuring device, and a cradle constructed of rollers with ball bearings, and so arranged that the salesman merely has to place the full roll upon the cradle and roll as much as he desires. This assures the customer a perfectly clean and correctly measured length of paper, without any unnecessary delay.

The general and private offices are at the rear of the store floor, where a perfect system of the records of the business is kept, enabling ready and accurate reference of the smallest detail, which is quite necessary when one considers

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the thousands of articles which are carried in their stock.

In the basement which is thoroughly damp-proof there are located the order and shipping department and the reserve stock rooms.

The second floor is used as a display and salesroom for the more bulky and heavy articles, such as drawing tables, drawing boards, trestles, cabinets, print frames, etc.

The third floor is used for all incoming goods as they are received from their factories at Hoboken, N. J., where they are unpacked and distributed to the various departments.

On the fourth floor is the chemical laboratory, and paper coating machines where great quantities of blue print paper are sensitized, which in turn are shipped to all points on the Pacific slope and the Orient.

On this floor they have their repair department which is most complete, and which enables them to make all repairs without having to send this class of work to their factory.

On the top or fifth floor is the blue printing department—a feature of the establishment in which the management deservedly takes considerable pride. The plant is equipped with two federal continuous printing electric print machines of the latest models, one vertical cylindrical, electrical print frame, vacuum and sun frames, chemical and water baths, and a model dry room, besides all electrical apparatus for use in producing all kinds of blue, brown and cloth prints within the shortest space of time. Just seven minutes is the record time that it took the other day to make a print, 54 x 96 inches, for a customer who was in a hurry, from the time he brought in his tracing until the blue print was finished and returned to him complete

Throughout the entire building is a telephone system connecting all departments, and besides the regular passenger and freight elevators, there is a dumb waiter or small elevator, which connects with all floors, for conveying stock, etc., from one department to the other.

Artistic Stone Mantels

The Pacific Coast Art Mantel Company of which J. E. Manetta, the well known San Francisco modeler and Mr. Callahan, who is now associated with Mr. Manetta, are members, has established attractive offices and show rooms at 344 Tenth street, San Francisco. The company makes a speciality of artificial stone mantels for hotels, apartment houses and residences. Among the buildings equipped with mantels is the new apartment house on Pacific avenue, near Webster street, designed by Architect E. J. Vogel; the Cosmos club at Sutter and Octavia streets and a number of palatial residences.

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Howe Scale Company

The Howe Scale Company of San Francisco announces its removal from 1690 Market street, where it has been since the fire, to more commodious and centrally located quarters at 143 and 149 Main street, which thoroughfare is again becoming popular as a commercial and wholesale center. In addition to a complete line of scales the company is agent for the Hall's Safe Co., Fiske's fancy iron stable stalls and stable fixtures, as well as a full line of Fiske's copper weather vanes.

Meyers & Ward Were the Architects

The two handsome interiors shown in the October Architect and Engineer were of the Pacific avenue residence of Mr. Fleischacher, Meyers & Ward, architects. The interior decorations were planned by the architects and carried out by A. W. Reiber, who, at that time, represented the Jno. Breuner Company.

Appointed Sale's Agents

The well known San Francisco firm of Gilhuly and Ambler has recently been appointed the exclusive sale's agents of the following concerns: A. E. Shorthill Company, Marshalltown, Iowa, Morava Construction Company, Chicago, Ill., and the Buffalo Steel Company of Tonawanda, N. Y.

Oakland Material Men Organize

The Material Association of Alameda county has reorganized for the winter's work by the election of J. P. Gelinas of the Remillard Brick Company as president and John L. Howard, Jr., of the Western Fuel Company as secretary. The association intends to bring into its membership, which now numbers fifty of the largest firms in Oakland, all the contracting building firms except the lumber dealers. It is the purpose of the association to protect itself in business matters by determining the reliability of its members. Intent to regulate or control prices is denied.

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San Francisco Municipal Building

Building Superintendent Barnett of San Francisco has submitted a report on the condition of municipal buildings, in which he said that it would be a waste of money to rehabilitate the City Hall on the old lines, as it would cost more than would be required to erect a Class A building of seven stories to accommodate the civil courts and city offices. The report continues:

"The dome of the City Hall should be repaired and the main entrance beneath the dome should be the main entrance to the new building.

"The Hall of Justice was badly wrecked, but in my opinion is not a total loss and it can be restored. The Supervisors are trying to acquire land to enlarge the site and when that is done plans will be prepared and the building reconstructed.

"The City Hospital and Almshouse will no doubt be torn down and the county jails are very much in need of repairs. Many of the old engine houses need repairing and will be put in sanitary condition with available funds."

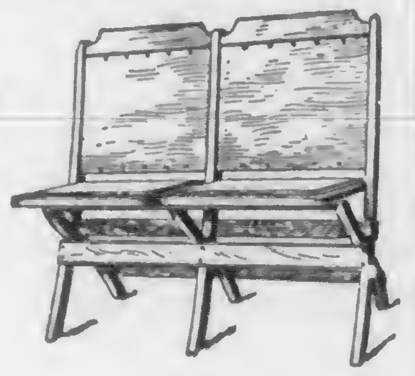
At the meeting of the Supervisors' building committee, Barnett was directed to secure bids for the removal of the southwest wing of the City Hall, formerly occupied by the Board of Works, Fire Commission, City Engineer and Judges of the Superior Court.

Death of Pioneer Founder

Leopold Frauneder, a pioneer iron founder of the Pacific Coast, died suddenly at his home in Oakland, October 28th, of apoplexy. Thirty years ago he established the Frauneder Ornamental Iron works in Oakland which later became the White-Frauneder Works until about two years ago when the old name was again resumed, the Whites establishing an independent company. Some time ago Mr. Frauneder retired from active business in favor of his son, Cornelius Frauneder, who is the present very capable head of the works.

Woods & Huddart Move

The well-known San Francisco firm of Woods & Huddart, dealers in iron and steel, have moved from 11 Front street to 356 Market street, corner of Front, the same location they occupied before the big fire. The firm have a fine suite of offices where they will be pleased to see their many old clients and as many more new ones. Woods & Huddart, as is well known, are extensive handlers of structural steel fabricated and they also carry in stock a big assortment of steel bars—round, square and twisted—for concrete reinforcement.



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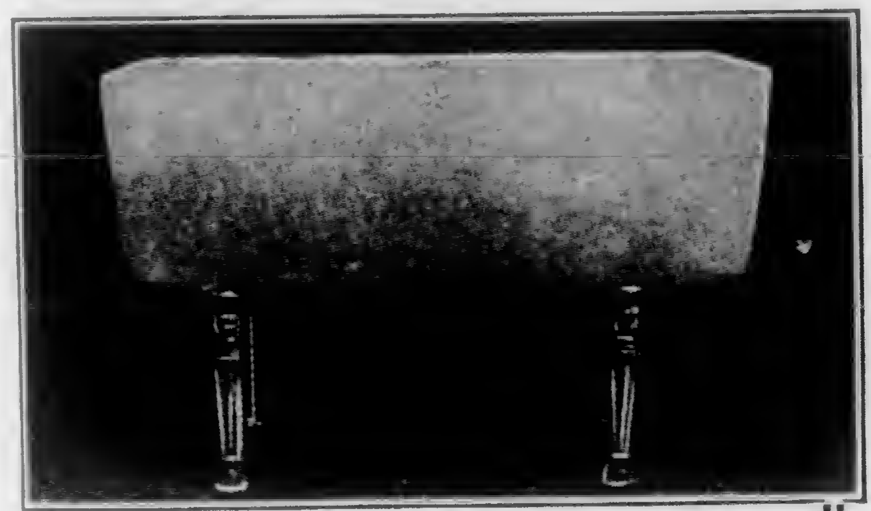

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Western Pacific Awards Big Contract

The Western Pacific has just shown great vigor in its fight for a portion of Harriman's transcontinental business. The former corporation is making immense preparations across San Francisco bay and northward, paralleling the tracks of the Southern Pacific into the rich territory along the Berkeley and Contra Costa shores, and also on the San Francisco side. The Western Pacific has just awarded a contract to the Western States Construction Company for the railroad company's terminals in San Francisco, the total cost being over $4,000,000.

This is one of the largest railwav contracts ever let on the Pacific Coast—in all its railroad-building history. The contract let for work on the San Francisco side of the Bay will give to the city much of the advantage that has heretofore been secured by Utah, Nevada, and Northern California, where, until now, building operations of the Western Pacific have been confined.

According to the terms of the big contracts just let, work must be commenced within fifteen days. Much of the time consumed in finishing the contract in San Francisco will be devoted to the difficult engineering feat of constructing a 1600-foot tunnel.

The Gould people have been securing a great deal of land in the vicinity of San Francisco and declare that their freight yards and slips will be large enough to accomodate all of the traffic that will be offered the company for years to come, and as convenient as the vards of the Southern Pacific or Santa Fe.

At present there are more than 8000 men employed by the Western Pacific on its road, and more are being added to that number all the time. Subcontractors are arriving every dav at Winnemucca and Boca to begin work on their contracts on the line across the "Sagebrush State."

Cement for San Jose Schools

The Henry Cowell Lime and Cement Company has taken the contract for supplying all the Portland cement for the seven new school houses in San Jose. All the buildings are to have concrete foundations and cement exteriors.

Thanks to Sunset Magazine

We are indebted to Sunset Magazine for the excellent half tone illustration of the new First National Bank building, which forms the frontispiece in this number of the Architect and Engineer.

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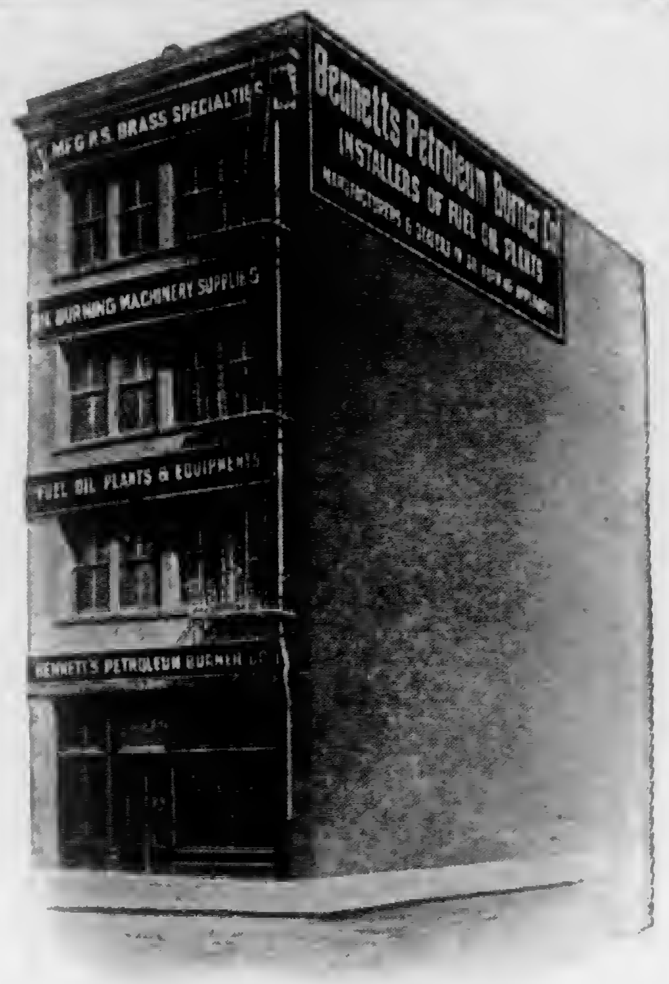

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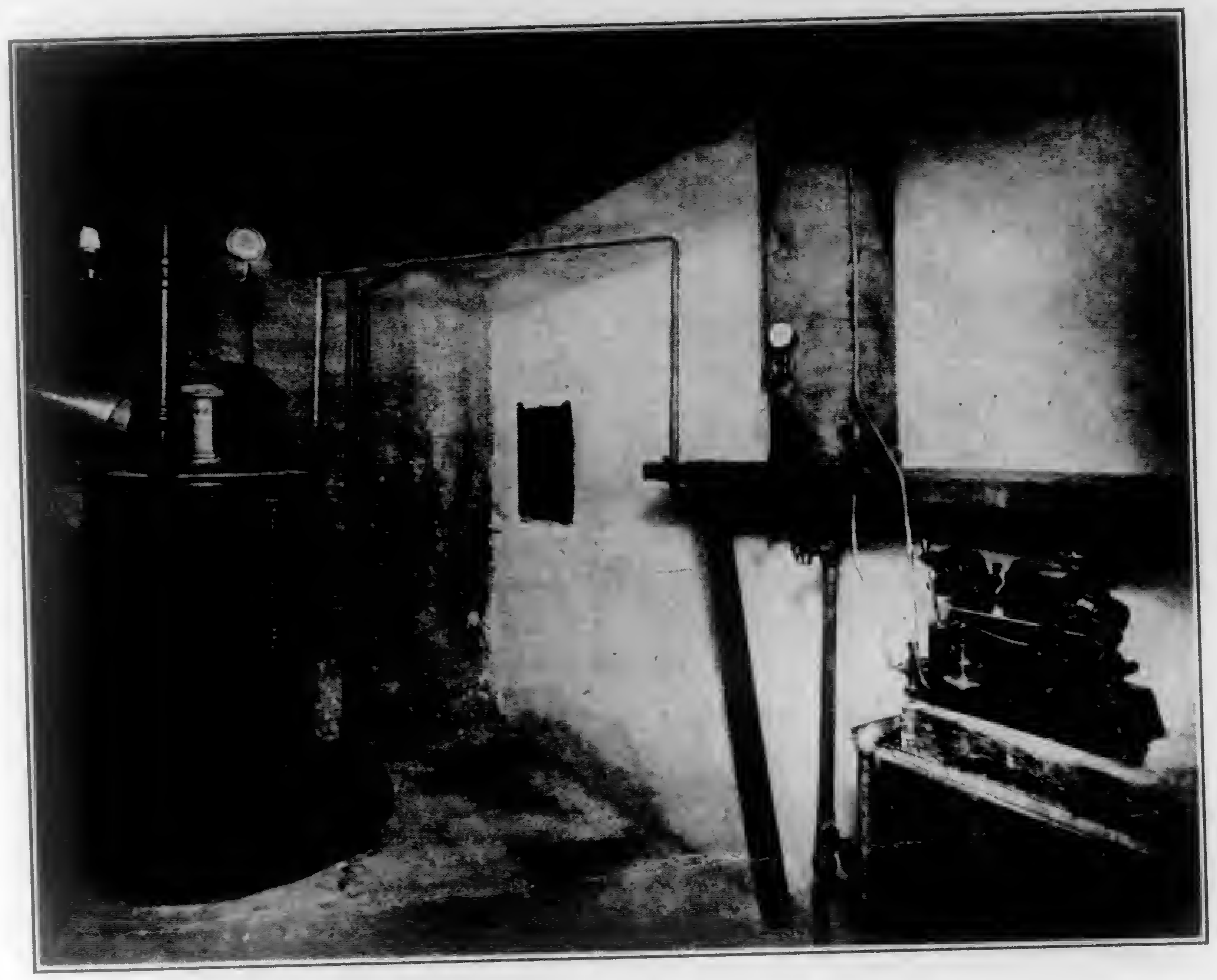

Dunn Oil Burning Plant in the Marsdon Building

Oil Burning Plants in Demand

The Dunn Petroleum Burner Company reports business exceptionally good. A number of large orders have lately been filled by the company and reports from those who have had the water heaters installed are highly encouraging. The company specializes in oil burning devices for hotels, hospitals, restaurants, bakeries, apartment houses, office buildings, private residences and power plants. A plant has lately been installed in the St. Winifred sanitarium, also the Commercial block on California street, the Morris Brown building, on Sutter street, and buildings for the United States government at the Presidio.

The photograph shown herewith is of an oil burning plant installed some time ago in the Marsdon building and which has more than paid for itself in the saving of fuel since being placed in operation. The plant consists of an electric pump that lifts the oil from

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a storage tank to a small feed tank which automatically supplies the fuel for an oil burning heater. This little heater is capable of giving sufficient steam to heat 1200 radiators in twenty minutes time. The oil tank which has a capacity of 1500 gallons, the piping, electric pump, heater and all connections can be installed complete for $1500 which is considered remarkably reasonable. A contract has just been taken by Mr. Dunn to install in the new Builders' Exchange building a plant similar to that in the Marsdon building, this, too, after a contract had been let for installing an American heater which system will now give way to the oil burning plant.

Mr. Dunn hopes to install a number of plants in the several new engine houses in San Francisco and vicinity. It is claimed that the municipal authorities would save hundreds of dollars a year if they would adopt the Dunn petroleum system which can be used to heat the boilers in the fire engines as well as the building itself or for either purpose separately at no additional cost.

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The Building Material Co., Inc., Monadnock building, San Francisco, reports recent orders for Medusa for the following constructions: Williams building, San Francisco; new County Court House, Santa Rosa, California; Delger building, San Francisco; Zellerbach building, San Francisco; Pond building, San Francisco; San Pedro, Los Angeles and Salt Lake Railroad Co., Lynn, Utah; concrete tanks of Lachman & Jacobi, Petaluma, California; Drexler building, San Francisco; Humboldt Savings Bank building, San Francisco; Woodward Investment Company's building, San Francisco; Michaels & Watt building, San Francisco, and Western Gypsum Co's Plant,. Reno, Nevada.

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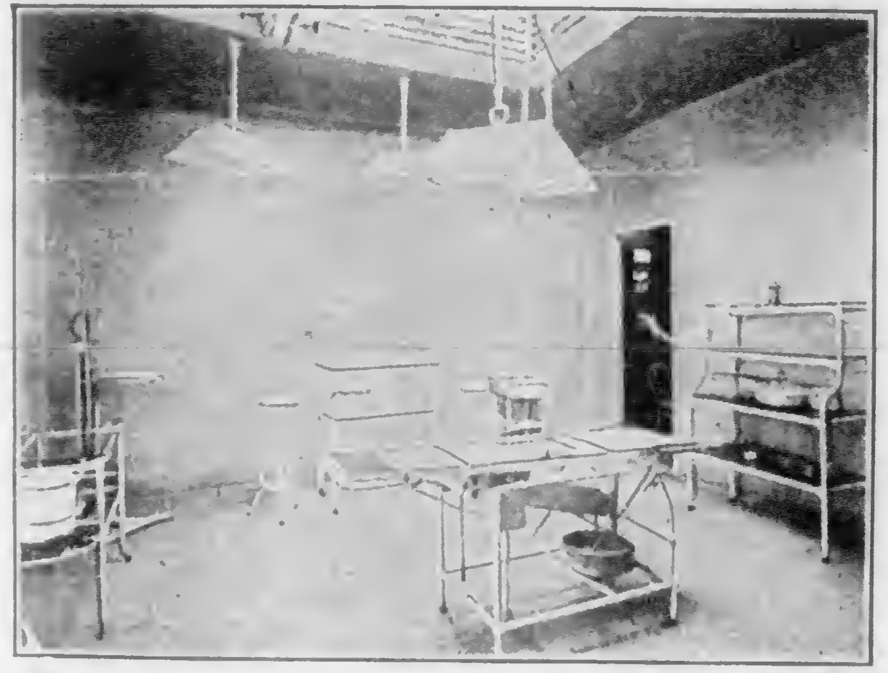

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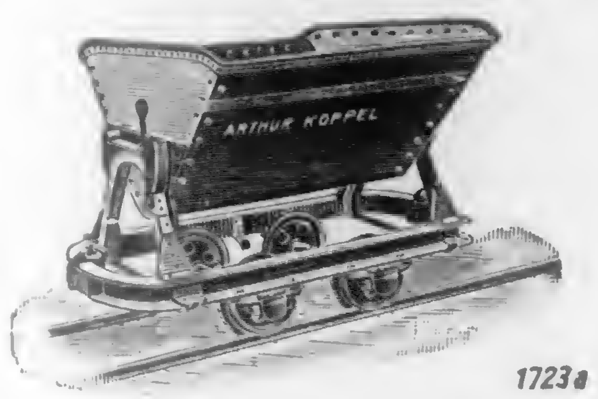

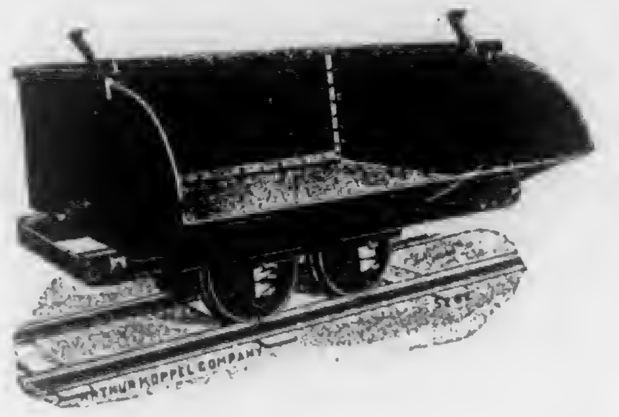

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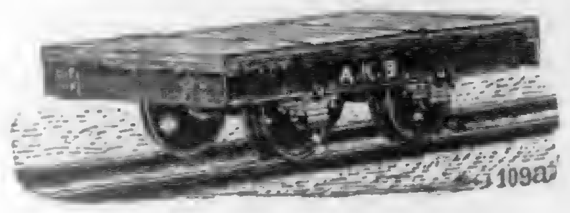

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Building Fees Abolished

The Cleveland's (Ohio) City Council has repealed all provisions in the new building code relating to the issue of permits to build.

It seems that Mayor Johnson and his followers argued that it was a special tax upon a person proposing to build, and was a hindrance to the development of the city. Others claimed that the building fee covered the case of a "careful inspection of buildings while in progress, giving to the owner value received, and affording protection to him against inferior work and the violation of building ordinances." This latter supposition is a humbug. The building inspector may examine the drawings and specifications of a proposed building, only that and nothing more. It is the architect's place, and he alone can see that the building is constructed in accordance with the drawings and specifications and the contract. If any thing explicitly flagrant is going on, it is possible that the attention of the building inspector may be called to it, but that is the limit of his oversight. Men should know better than to suppose that a permit costing from $10 to $50 insures the superintendency of his work.

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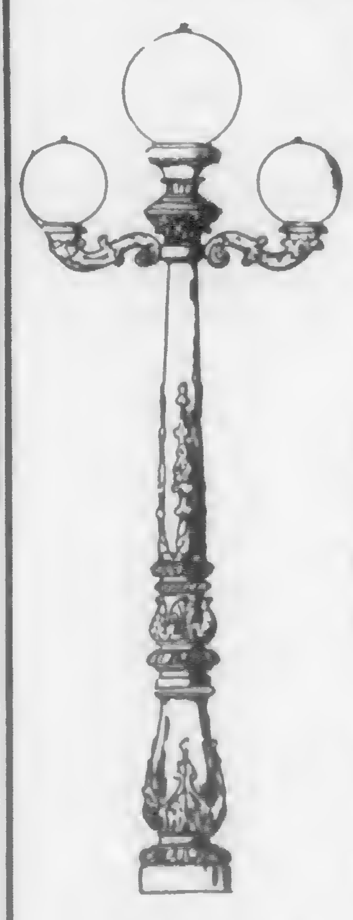

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The Builders' Exchanges of San Francisco and Oakland have moved into new quarters, the San Francisco Exchange having taken possession of its own building on Stevenson street, not far from the site of the old quarters before the fire. The new building is large, light and airy and is a vast improvement over the temporary shack used immediately after the earthquake. A number of offices on the upper floors have been rented by various San Francisco material men.

The new Oakland quarters are in the Remillard building on Eighteenth street, part of the ground floor having been leased for the convenience of the 300 or more enthusiastic members.

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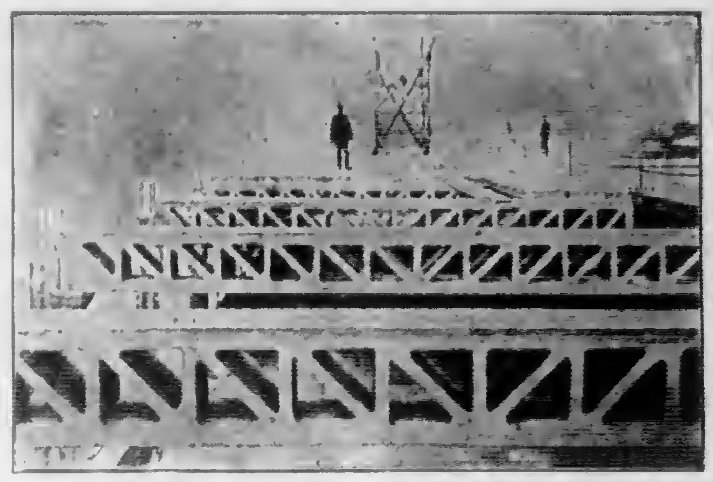
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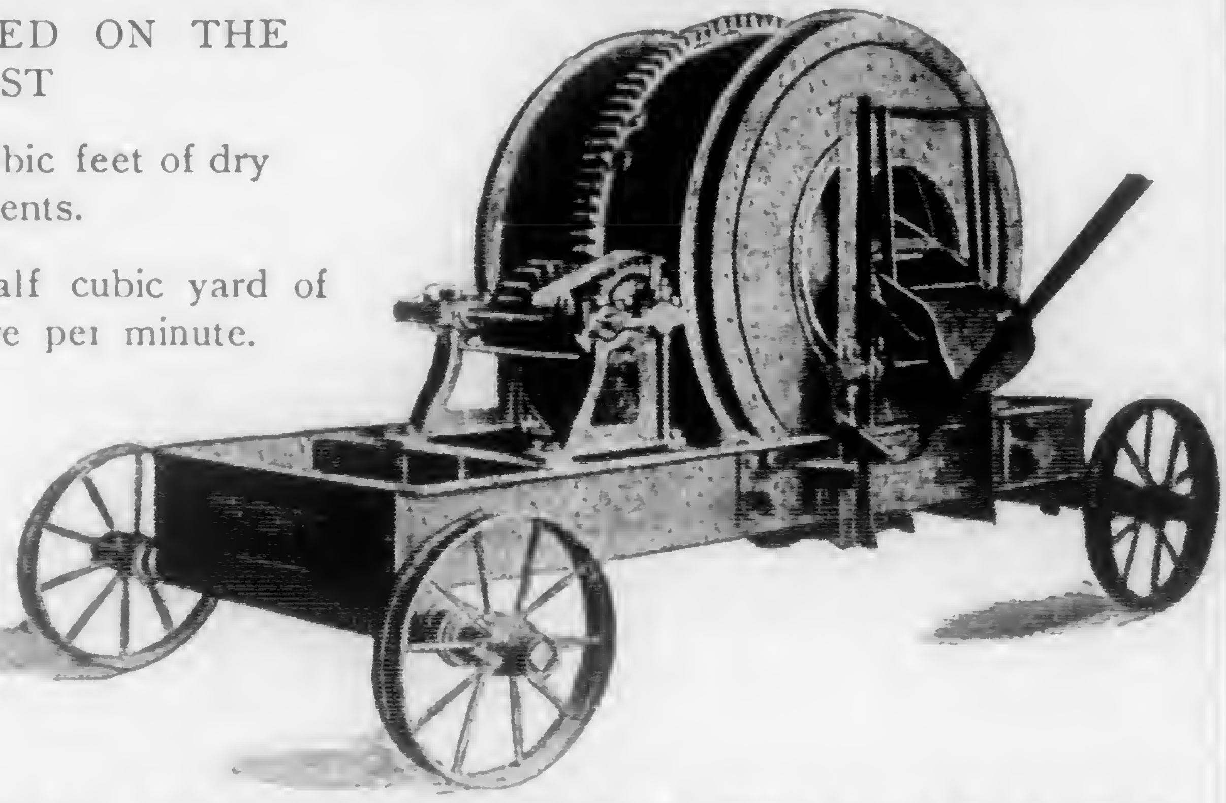

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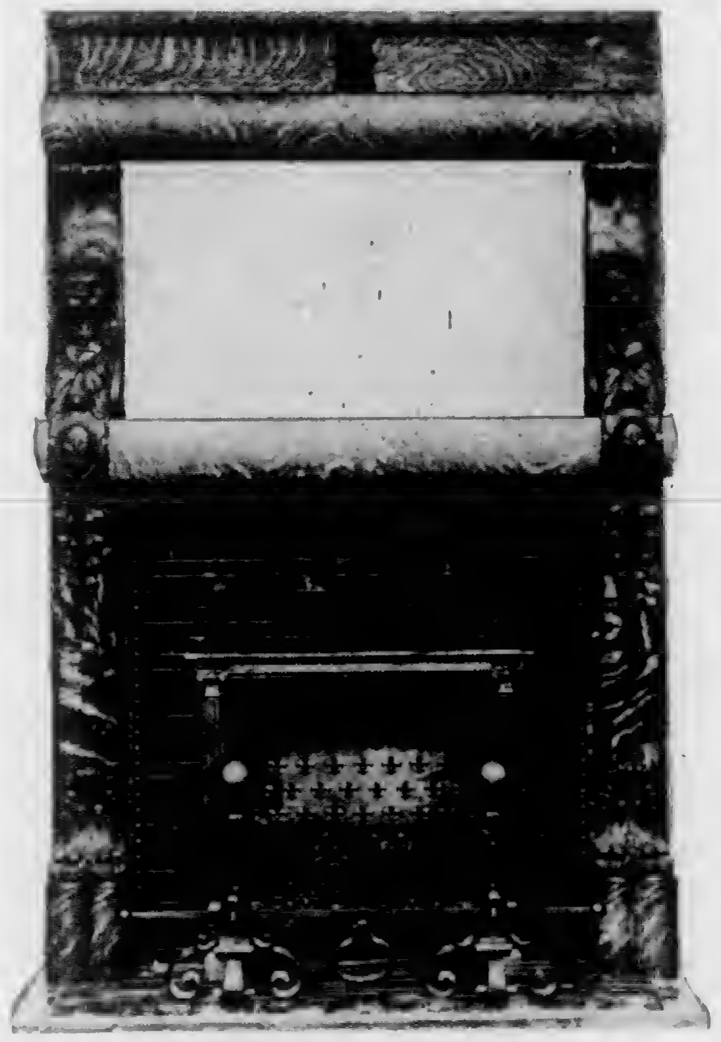

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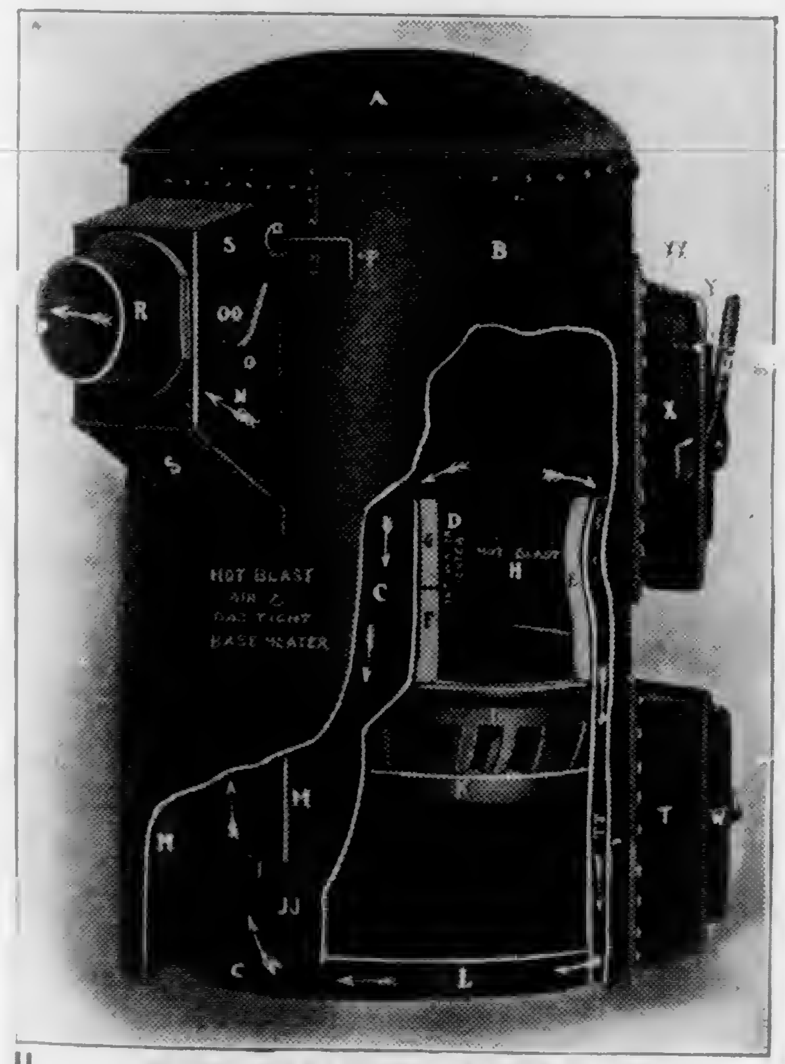

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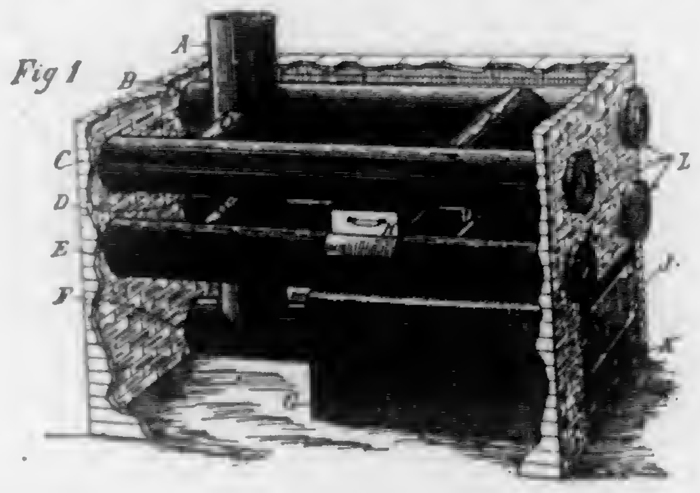

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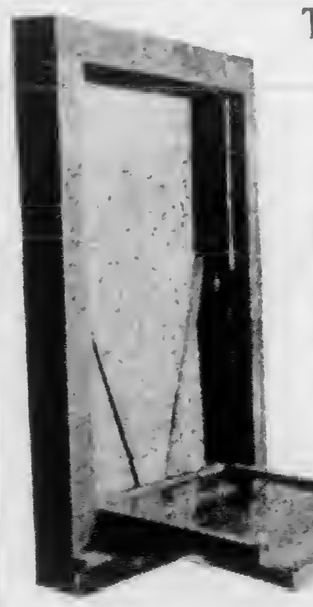

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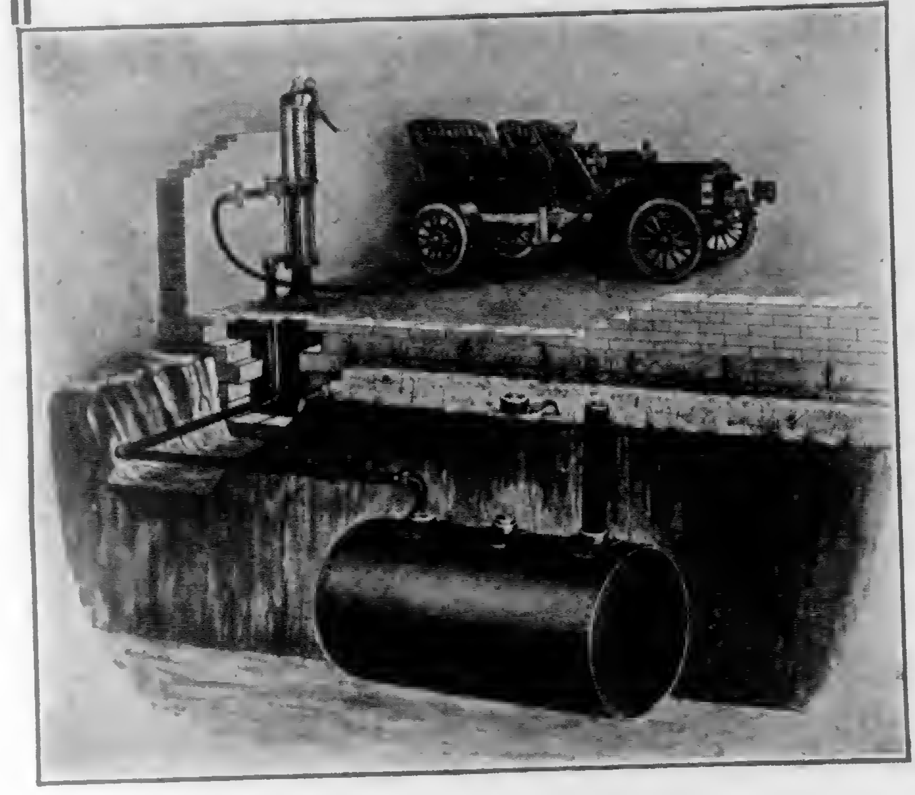

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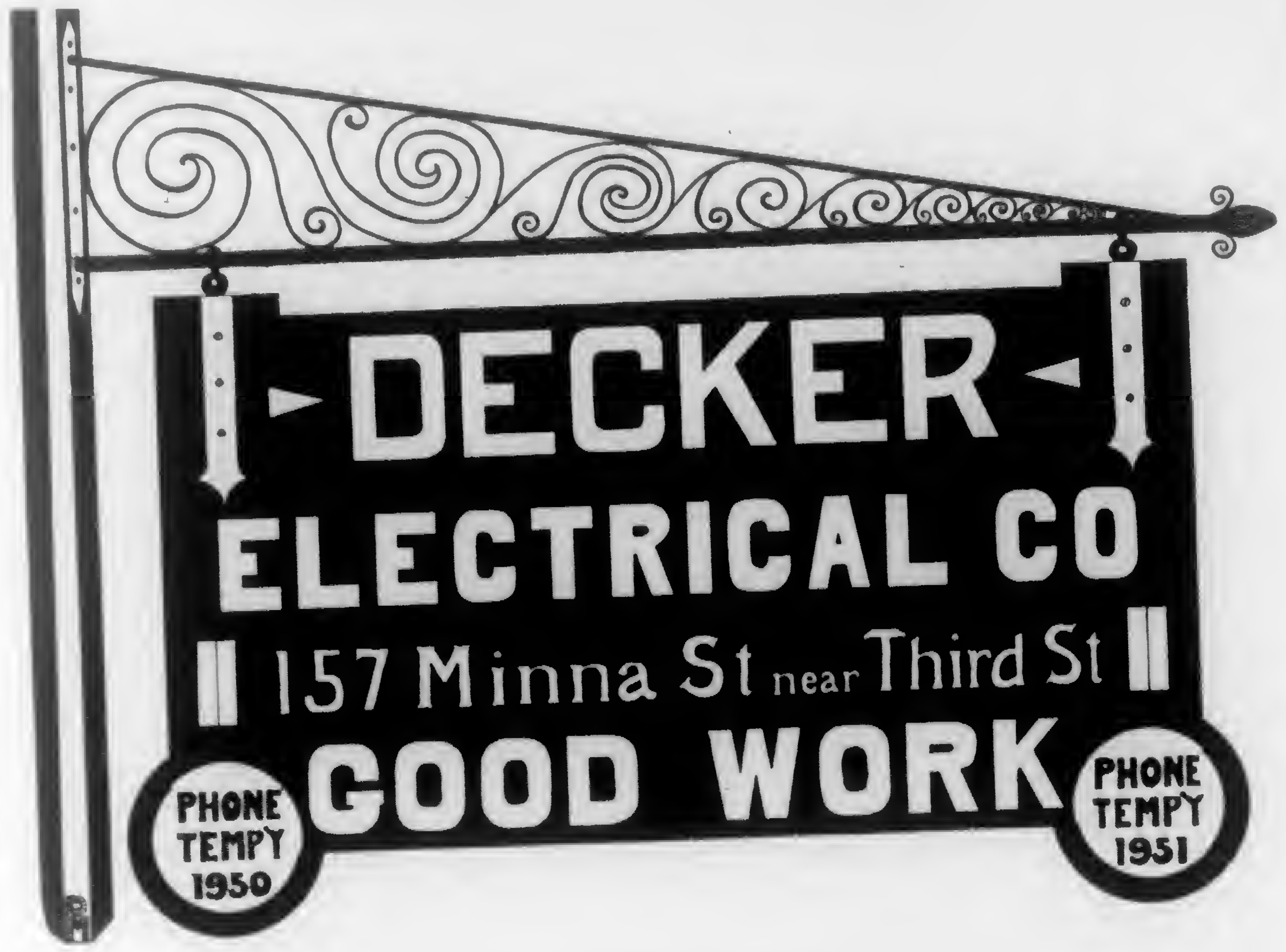

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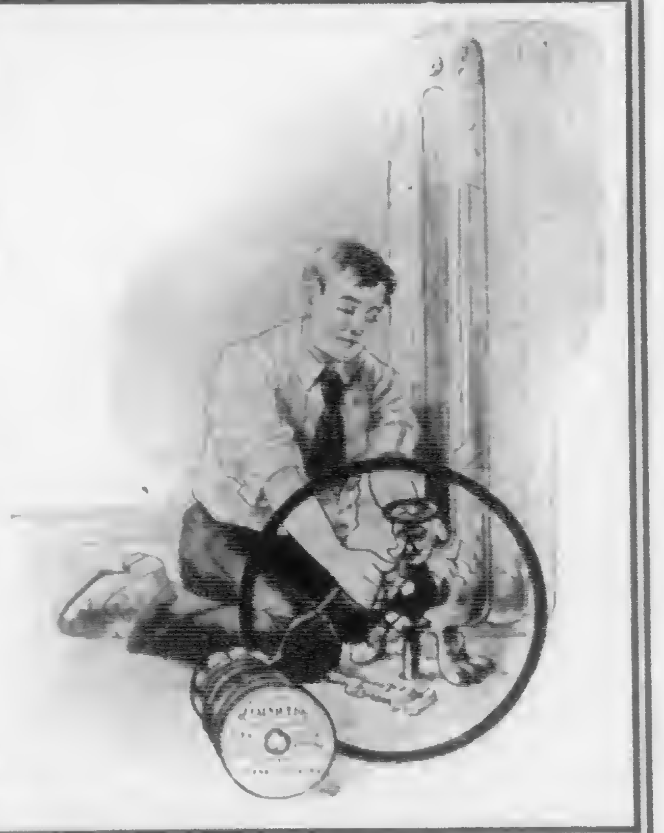

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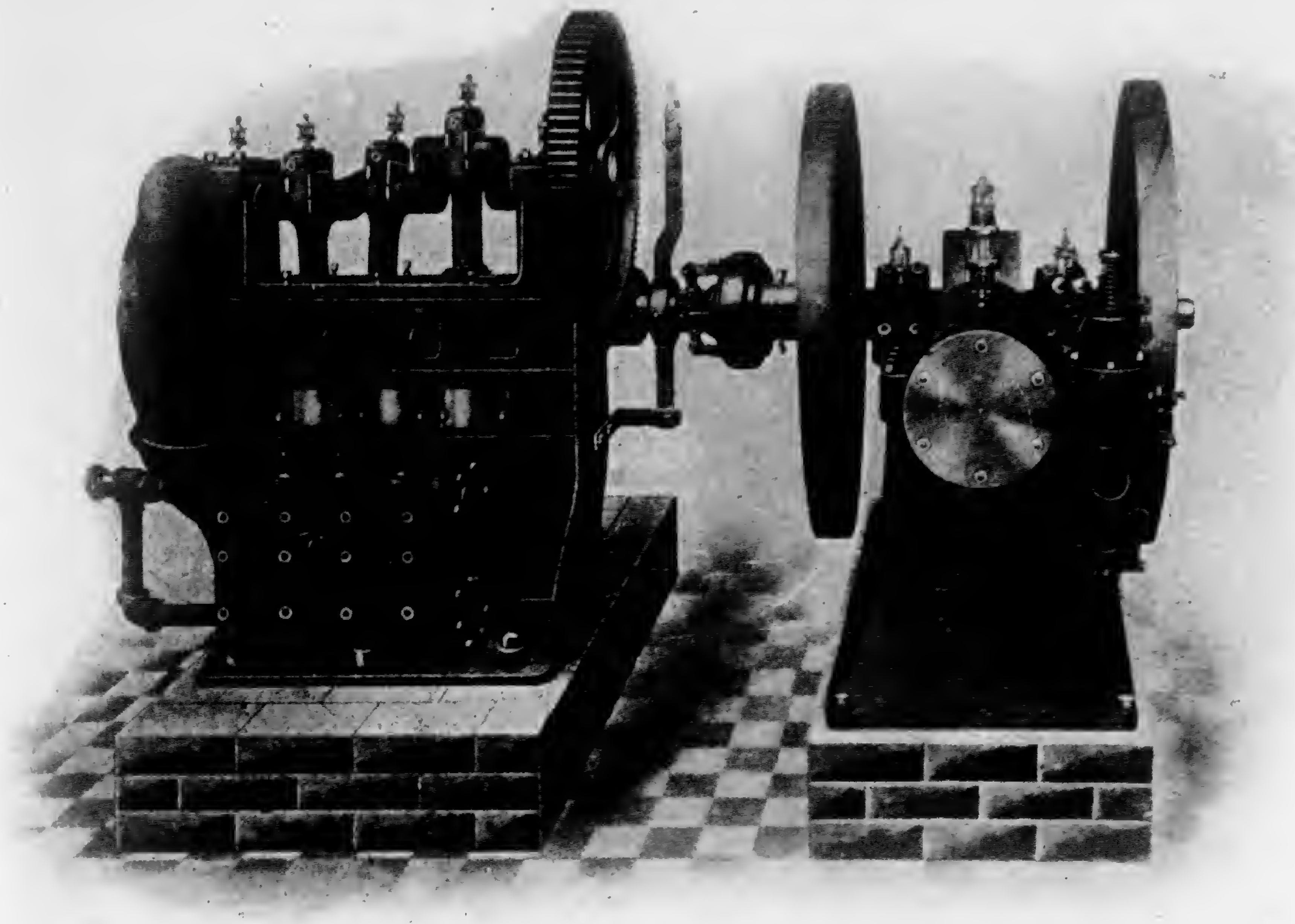

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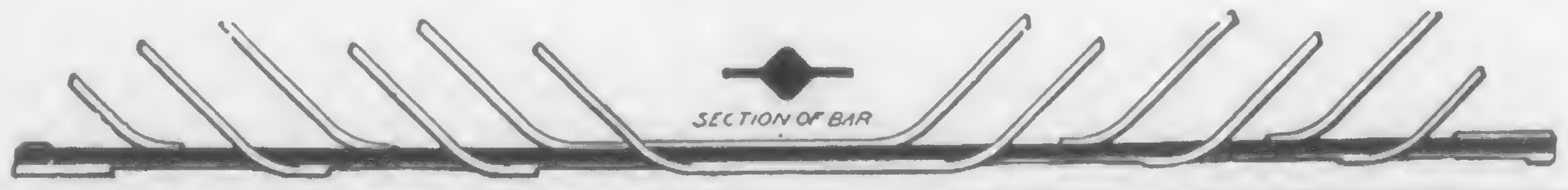

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LOUIS CHRISTIAN MULLGARDT, F. A. I. A.

Frontispiece, The Architect and Engineer
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CHRISTMAS NUMBER
THE
Architect and Engineer
Of California

VOL. XI. DECEMBER, 1907. NO. 2.

The Commercial Value of Good Architecture

By LOUIS CHRISTIAN MULLGARDT, F. A. I. A.

THE rudimentary principles of architecture were discovered by man so many centuries ago, that no one knows how long, and it scarcely matters. We are altogether interested in the fact that architecture came into existence through man's inheritance of the three fundamental principals of construction: i. e. the pier and lintel, the post brace and beam, and the pier and arch.

Time dates so far back that its true significance is lost if coupled with the importance of that period in the world's history when man became sufficiently enlightened to recognize these three fundamental laws upon which succeeding ages have designed all that is known of the art and science of architecture.

These three rudimentary principles of architecture required many ages for their gradual development into those beautiful forms and proportions which are attributable to ancient, medieval and modern times.

Man's enlightenment directed him into a higher state of civilization, and the art of architecture progressed out of its primitive origin at the same ratio, and ultimately became the progenitor of the arts of sculpture and painting; as also that of the science of engineering.

Of all great things inanimate yet living, architecture finds its greatest synonym in the forests. Like unto the diverse specie of forest monarchs is architecture also diverse, according to the sections of the earth to which each is indigenous.

Transplanting of either becomes more common, as transmigration of man increases, or according to his needs, his will or his whim.

Each race of people inhabiting the earth now or in past ages, however deficient or advanced their civilization, invariably produced some form of decorative art alike to that of the painter or sculptor, and which, however primitive, invariably shows marked differences of form, color and expression from that of the art of any other race.

It is especially noteworthy and significant, that there are certain grades of civilization within all races, in which architecture does not advance, neither does it retrogress. This condition may generally be attributed to the laws of tradition which retard progress where they govern.

Still further down the scale we recognize the so-called barbaric races, whose peoples have no architecture. We know therefore, that the quality of architecture produced by a nation during any specified period, is invariably the direct expression of its degree of civilization and culture. Its architecture bespeaks its exact state of advancement and its refinement in all things ethical and spiritual as well as material.

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All of the best examples of architecture are clearly symbolic of the purposes which prompted their existence.

Any architectural production which does not truthfully express the purposes for which it was created, or, which falsely denotes its constructive principle, fails in the first essential quality, that of Truth, which is the highest embodiment of good architecture, and without which nothing can be good.

False architecture is corrupting in its influence to a much greater extent than is generally supposed.

We are constantly associated with the product of the architect's genius, and are obliged to observe many things by which we are unconsciously influenced, either for good or bad, truth or falsity, according to the nature or quality of that which we see.

The general public gets its knowledge of architecture, however superficially, through that which it observes daily along the city streets and suburban roads.

Architecture is something which most people profess to have considerable knowledge of—which is admittedly true, though unfortunately it is not usually of the right sort. This professed knowledge tends of course to excite a keener public interest in the architecture which it sees, which, if its quality be low in scale, must necessarily be retardent in its effect against the good influence produced by commendable work.

To produce good architecture requires many years of serious study, thought, observation, work: It requires careful guidance into the proper fields of research by those who possess a superior knowledge of the arts and sciences of architecture.

The discerning student guards himself particularly against acquiring the common knowledge of "business architecture," which may be had in many offices, common in every large community; for it is well known that the "Muse of Art" seldom folds her benign wings over a so-called "plan factory" where speed in turning out work is of first importance. True art in architecture like all else which is truly art, comes from the hard pressed soul of mankind, and not from a machine, or out of the purse.

Anyone pursuing the study of architecture with the object of entering the field of practice, must bear in mind that instinctive qualification is the true essence of good original work; however, instinctive qualification can only be brought into the field of usefulness through careful cultivation: Then again, culture alone will not produce art, therefore either alone, will not insure to the world a higher standard of architecture.

Many men possess a certain mechanical genius, which is frequently mistaken for an artistic temperament. They pass through the universities, receive their "sheepskins" in absolute confidence that they are Masters of Fine Arts—then they proceed to practice the profession of architecture on an "unsuspecting public", with full confidence that their work will astonish the public, and the profession in particular.

Most of our buildings are as a rule sufficiently well constructed to stand but poorly designed, both in plan and exterior.

If the law of gravitation should suddenly change, so that quality of design instead of construction would stand or fall according to its merit, what a fearful devastation there would be between our few then remaining examples of good architecture.

There is a steadfast opinion prevailing that this is essentially a Commercial Age—that we are so engrossed in our commerce, with a desire to make money, as to be blinded against the intrinsic value of true art.

It is a fact that some men undergo a decided change of love for the beautiful, whenever it commands a personal sacrifice for art's sake without apparent promise of "return with interest". Nevertheless, there is a strong current of true love for the best that may be had in art, and for which fabulous sums are willingly expended.

The majority of people are sincerely devoted to the fine arts, and in their earnest search for it are frequently led on the wrong scent by the aniseed of so-called art.

The man of commerce knows perfectly well, that art has an intrinsic value, especially in architecture, and that it is unequaled by any other potent force, for commanding a revenue if consistently introduced, therefore he looks for it for revenue's sake if not for the love of art for art's sake.

There are also many architects in every community who practice architecture "for revenue only", they devote their best talent and the greater part of their personal time and resources in search for additional work, paying little or no attention to the work already secured: The work in hand goes through the "plan factory" with all the speed that the office force is capable of, and the whole business is apparently carried on with the sole object of keeping the bill clerk busy.

What do the people who want to build know or care about the amount of grinding that is required in the preliminary stage, or at any time, whereby the true architect evolves the very best plan and design out of numberless different ways in which every problem can be solved.

The ultimate success of any design depends entirely upon the most serious preliminary study by the master mind.

Any problem which has thus been solved, is then ready for the drafting room, which is the architect's pattern shop.

There is no logical excuse for the architect who declines the smaller and less expensive class of work, on the grounds that he is too busy, but who at no time declines to accept or finds himself too busy to go after any of the larger work that he may possibly secure.

Inexpensive problems, such as residences, are as a rule by far the most difficult to solve. They are generally also the most interesting. Such problems demand the most careful study for a correct solution. They make up the major part of the architecture of any country, and they deserve to be designed with the greatest care by the best talent available.

The architect's moral responsibility to the great public is practically that of the physician, or surgeon, whose first duty is to serve when called, provided he knows himself to be qualified. The people of all Christian countries devote more time and money during this present era searching to acquire that which appeals to their artistic temperament than at any time during the world's history.

This is admittedly the commercial age of the world's history, but we must acknowledge that it is likewise the age of progress in art. An age in which art and commercialism thrive hand in hand. The two are emphatically interdependent, ample evidence of which may be found in whatever field we may choose to investigate, and compare with work which has been done throughout the great past.

The peoples of the world are making rapid progress in many fields of work. We of today are enjoying the unsurpassed advantages, which the law of inheritance has brought to us in knowledge of the results attained through centuries of hard toil and experience of nations which have gone before.

History, archaeological research, the sciences, especially those of photography and modern intercommunication, serve to keep us in intimate touch with the world's past and present: This great accumulation of knowledge is our heritage, it establishes the mile-stone of the world's present day development, by which we are enabled to progress with greater confidence in each step which we advance.

It remains our duty as well as our privilege to profit by the failures as well as the successes of the past, that we may thereby better our condition, and increase the value of the heritage which we shall leave for succeeding generations.

* * *

Contractors Should be Protected Against Debts Contracted for Employees

MR. F. H. NEWELL, director of the Reclamation Service, in his report has the following to say regarding laborers working for his department:

"One of the most serious and complex problems with which the engineers have had to deal has been that of labor. As a rule the pay roll on the Gunnison project contains 800 or 900 names a month, while the number of men actually employed at one time probably does not exceed 450. This condition has confronted the contractors as well as the engineers who are directing the work carried on by force account. The contractors have been obliged to ship most of the laborers from the large centers and in many cases the men do not work long enough to repay the money advanced for their transportation expenses."

One of the greatest troubles that contractors have with laborers is that mentioned in the last part of the paragraph, the "skipping of transportation," as it is termed in camps. In carrying on heavy construction work in the country it is never possible to obtain enough laborers from the local sources, and, even where it is possible to get a large number of men, they are usually not accustomed to the work, and a large per cent will not stay on the job long enough to learn and become endured to the work.

Consequently the contractors must go to the laboring centers and carry men from them to their various jobs. The contractor must ordinarily pay agents to collect the men for him. In some cases, in order to carry men from one state to another he must pay a license. Then the men must be fed on the trip, their transportation charges paid, and after arriving at the work the laborer must be furnished bedding, often shoes and clothing to fit him for work, and must be given food while he works, and pays the debts he has contracted.

For any board furnished the man, he can be legally held, but, for the other money spent on him, the contractor has no means of recovering, except by keeping close watch on him. Contractors throughout the country, annually lose thousands of dollars through the desertion of men whose transportation they have paid. If contractors attempt to hold the men by guarding them, and thus prevent them from "skipping their transportation" they are liable to be arrested for peonage.

This is a condition that exists on much government work, as well as on private contracts, and as most men are taken from one state to another, it has become an interstate matter. It is a subject for Congress to handle and make such laws that will protect both the contractor and the laborer. Now that Director Newell has called attention to the subject it would seem an opportune time to better these conditions. This is one of the many subjects that the American Society of Engineering-Contractors will have to consider.

The Color Scheme of the Pacific Building

By CHARLES F. WHITTLESEY, Architect

YOU have asked me why I am using color so rashly in the treatment of the Pacific building at the corner of Fourth and Market streets, San Francisco. Your question surprises me as much as my color scheme seems to have surprised you; for I sincerely believe that the treatment is rational and logical, and though it probably strikes the majority of people, in its present unfinished condition as harsh and erratic, I feel confident that the completed scheme will win the approbation of the majority. In its present condition the green tile seems to bat one's eye violently, in contrast to the great expanse of gray cement of the unfinished building, and you may experience a further shock when I tell you that the green tile is to cover the entire exterior of the upper portion of the building, relieved only by the cream white terra cotta trimmings which grow more profusely decorated and become broader in mass as the finishing is carried upward to the cornice which crowns the building in a wealth of ornament in the same creamy white terra cotta.

A large woman draped in a silk gown of solid green unrelieved by any other color or trimmings would not perhaps meet with your approbation, but if the gown were overlaid with Irish point lace in broad cream-colored bands and especially if the lady possessed a profusion of rich auburn hair a la pompadour, would she not be attractive?

That reminds me that in the cartouche at the top of each of the tall piers between the windows of the building in question, there will be the merest touch of bright vermilion in the ornament, like a brilliant stone in your satin cravat. But I have not answered your question; why did I do it?

Because the climate of our city is decidedly gray and this is accentuated all about town, especially in the large buildings by the use of a peculiarly gloomy stone of a disagreeable yellowish gray color that catches and absorbs much of the smudge carried on the winds.

This town is so shady in color as well as in morals, that a little spot of white, whether it be of terra cotta or holy water attracts attention like a diamond dropped in the mud; and that is why my color scheme which is really soft, strikes you at first as being too strong. And if when it is finished you still think it too hot, you will need to walk on the other side of the street only for a few months till the elements (the dust in the wind) have softened and blended it a wee bit.

Moreover, the poor people coming down town on the Market-street cars on a foggy morning will feel a glow of grateful warmth as they pass the corner of Fourth and Market, and it will not be all on their right side either, for just across the street I am covering the Westbank building with cream white terra cotta over the entire exterior except for the spandrels over the mezzanine arches, which will be in the hottest red you ever heard about. If this polychrome treatment is a failure the crime is on my head and not on the owners, for it required considerable persuasion to get their consent to it.

You have asked me also what my precedent was for it. I hadn't thought about that, but you will recall that the Moors, the Greeks, the Romans, the Pompeiians and the Egyptians used brilliant polychrome effects in the best examples of their architecture, and in mediaeval times the Italian cities, and in Germany and Austria strong colors were lavishly used on the exterior of buildings.

In our own country, some of the most recent and successful buildings in New York are in polychrome terra cotta, notably Dr. Parkhurst's church.

If you are asking for local precedent, I will ask you if you expect me to follow local architectural precedent in making bad copies of dismembered parts of ancient Greek temples and vainly endeavoring to adapt them to modern commercial purposes, where the building law requires that we build no structure outside the street line and the owner demands that we give him every foot of rentable floor space and all the glass surface possible for sunlight?

Would you have me follow the stupid precedent of building ponderous cornices in sheet iron in imitation of massive stone from that same ancient temple?

When the Pacific building is finished it will give me great pleasure to stand beside you on the opposite corner of the street and explain to you the logical development of the design, the reason for the masses where masses are, the relation of enrichment to reposeful surfaces, and listen to your enraptured murmurings of commendation for the color scheme.

* * *

The Production of Common Brick

OF THE long list of mineral products of the United States concerning which statistics are collected by the National Geological Survey, only three—pig iron, copper and bituminous coal—exceeded in value in 1906 the products of the clays; and of the clays themselves the product ranking highest in value was, as heretofore, the common brick, of which more than ten billions—to be exact, 10,027,039,000—were marketed during the last year. The value of this great product amounted to $61,300,696, an increase of $93,687 over the value of 1905, and constituted 47.30 per cent of the value of all the brick and tile products, and 38.07 per cent of the value of the entire product of the clay industries.

The largest production of common brick in 1906 by any one State was reported by New York, whose output amounted to 1,535,579,000 brick, valued at $9,205,981 or about $6 per thousand. This quantity represents 15.31 per cent of the entire output of the country, and the value is 15.02 per cent of the total. The greater part of New York's common brick comes from the Hudson River region, which is one of the most interesting centers of the clay-working industries in the United States, and has for many years been the almost exclusive source of supply for the common building brick used in New York City.

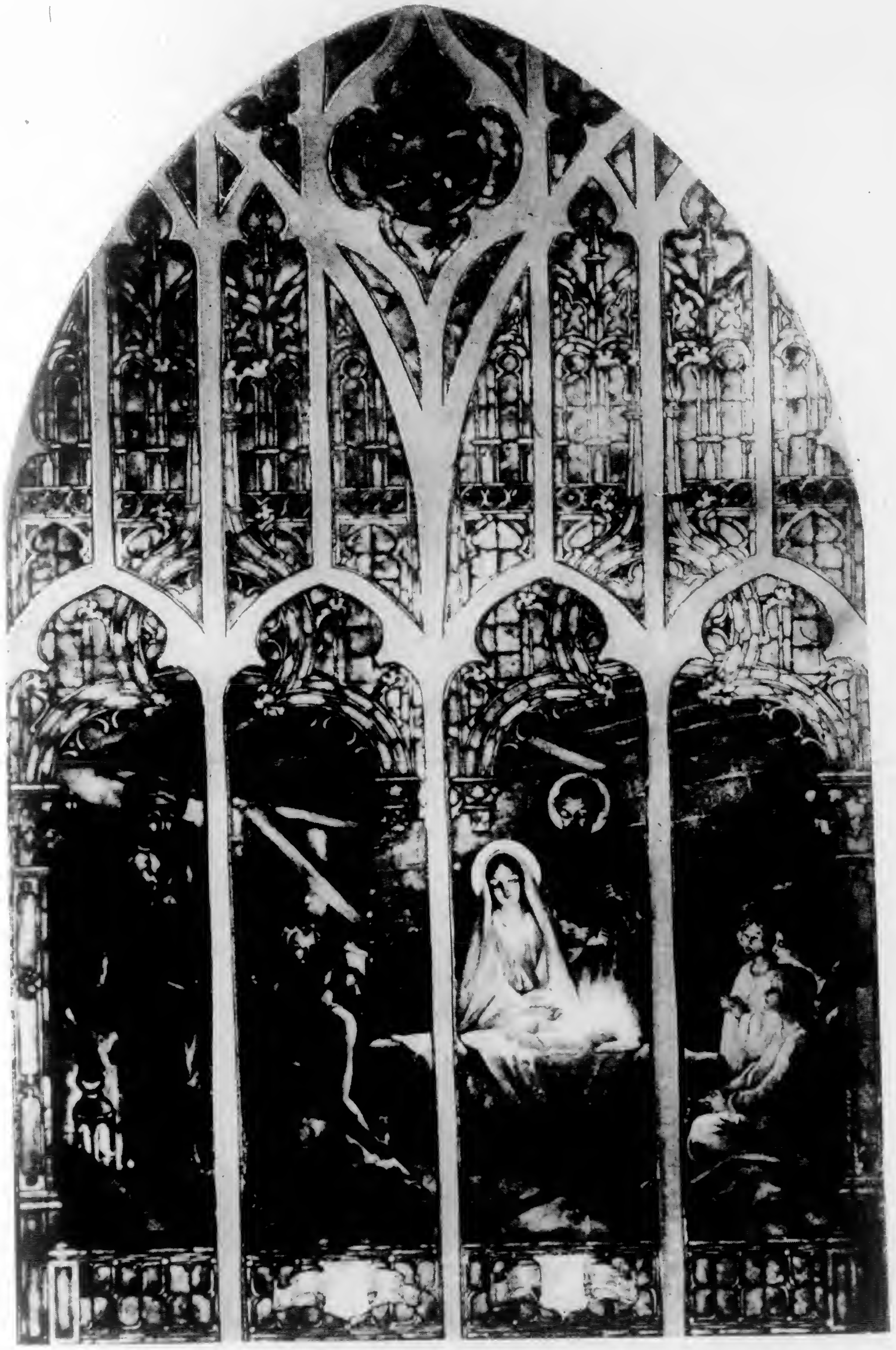
Next to New York, the largest producer of common brick in 1906 was Illinois, which reported an output of 1,195,210, brick, valued at $5,719,906, or $4.79 per thousand. The great common-brick producing region of Illinois is Cook county, and it was the decline in price in this district that brought the average price per thousand for the State to $4.79, the lowest for several years.

The only other State reporting more than a billion common brick was Pennsylvania, whose marketed output amounted to 1,027,541 brick, valued at $6,586,374, or $6.41 per thousand. While third in quantity the product of this State was second in value, and the average value per thousand was greater than that for either New York or Illinois.

Ohio's production of common brick in 1906 was fourth in quantity and value—550,422,000 brick, valued at $3,243,157, or $5.89 per thousand—and New Jersey's was fifth, amounting to 413,258,000 brick, valued at $2,610,686, or $6.32 per thousand. The other states range from Kansas, with 314,371,000 brick, valued at $1,376,552, or $4.38 per thousand, to South Dakota with 6,064,000 brick, valued at $54,175, or $8.93 per thousand. California's 278,780,000 common brick were valued at $1,962,866, or $7.05 per thousand.

The average price per thousand for common brick in 1906 ranged from $9.69 in Wyoming, to $4.38 in Kansas, the average for the whole country being $6.11. The State whose average per thousand most nearly approached the general average was Tennessee, where the average price was $6.13 per thousand.

The Hooker & Lent Building, First & Market Streets, San Francisco
Meyer & O'Brien, Architects *Equipped with Otis Elevators*



The Nativity

An Appreciation of Stained Glass

By JOHN CALVIN SPAULDING*

THE church has ever fostered religious art. The masterpieces of the early painters were inspired by the sublime earthly life of our Lord, and to the church—with its encouragement and patronage—belongs the credit of making possible these masterpieces. To the church belongs also the credit of their preservation, a wonder, an inspiration and a help as they are to all who are privileged, in these later days, to see them, and to catch, perhaps, a breath of the spirit, the heart, the soul and the deep reverence that entered into their creation. We possibly cannot realize today, how great a help these representations were to the churches of old, struggling as they were, to overcome adverse influences. Those were times when the evidence of the eye was more or less essential; and from the fact that through the church, they were preserved to us, we may well believe that the artists were important instruments in the spread of the gospel.

The spirit of the season is symbolized in the beautiful half-tone illustration of "The Nativity," which accompanies this article. It is, indeed, a masterpiece and was made by the MacKay Company for one of our great cathedrals on the Pacific Coast. The picture is unusual in that it possesses the Tissot touch, an artist whose fame as a painter of Palestine life and characters is world wide. In the picture are shown the humble shepherds who were the first to see the Christ. The painting, of course, is much more effective than the photograph, for the rich oriental colors are produced with skill and marvelous accuracy.

The art of stained glass is so closely allied to ecclesiastical decoration that it very naturally followed the fortunes of the church and its patrons. A brief review, therefore, of its growth in Europe, up to the Renaissance period, may be interesting. Its growth was not so much due to national prosperity, perhaps, as to the fame of a church, the prosperity of a bishopric, or the devotion of a patron. Neither war nor pestilence seems to have retarded its development. The more men died, the more and the greater was the need for the church and for its ministrations; for which gratitude was often expressed by the gift of a window, given to the glory of God and in memory of those passed away, or as a memorial to the ministering.

These memorial windows, therefore, were spread over the various countries where glass painting was practiced, in a manner that strikes us—with our lack of knowledge of local history—as being capricious. A wonderful wealth of glass is found in places now of so little importance in the world, as to cause us to wonder how it came there; but a study of local history usually clears up the mystery; and when it does not, we can safely put it down to the account of some art-loving ecclesiastic or pious donor whose name is lost.

The art seems to have arisen in France—we believe during the reign of Charlemagne—and spread from France throughout the world, the Crusades adding their impulse.

We find the earliest glass in places of historical interest. In St. Denis, in the twelfth century, Louis VI was educated; Chartres was a famous place of pilgrimage; at Reims the French kings were consecrated, and at Bourges was an archbishopric. During the thirteenth century conditions in France became more settled and the art naturally advanced under the reign of a king who was so pious as to afterward become canonized. Cities of importance, like Auxerre and Amiens, with the granting of their communal charters, burst into patronage of the art. During the Hundred

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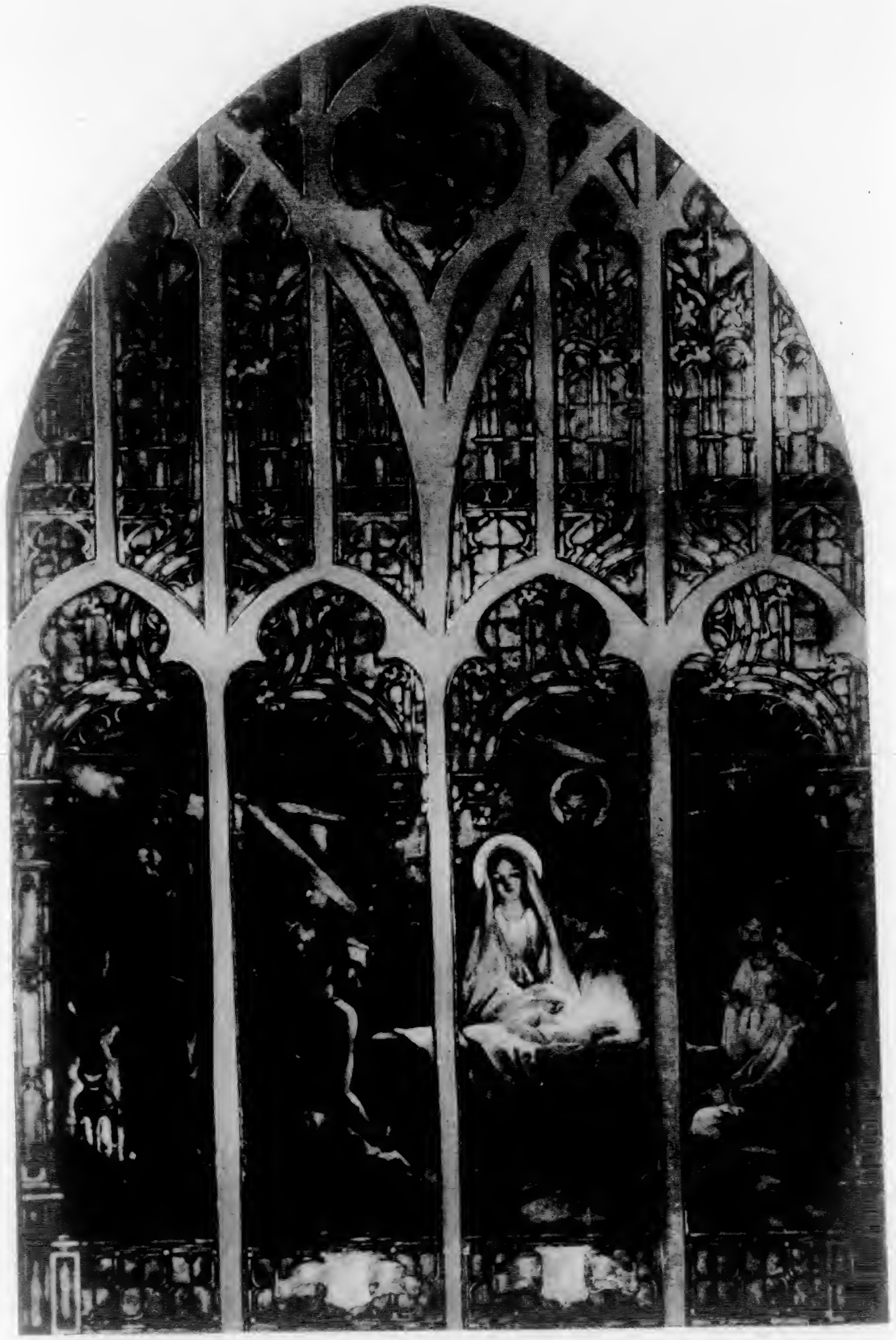
Mr. Spaulding, formerly of the Tiffany studios, New York, is manager of the San Francisco office of the MacKay & Co., Los Angeles.



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Years' War and the ravages of the Black Death, which laid France waste from the Somme to the Loire, the art suffered, but at Troyes, the place of famous fairs, and at Chartres and Evreux (both important sees), good work was done. Toward the end of the century the country began to right itself, and we find fine windows of this period at Bourges, and at Rouen.

The great people of the sixteenth century from the kings downward, made patronage of the arts fashionable, and the origin of many conspicuously fine windows can be traced to their munificence, viz., in the Church of Brou, the gifts of Margaret of Savoy; at Ecouen and Montmorency, the gifts of the family of the great Constable; and at Liege and Brussels, the gifts of Charles V. In England, under Edward I, important glass of the thirteenth century is found in Canterbury, a place visited by pilgrims from all over the world. It was found also at Salisbury and Lincoln, both seats of parliament; and at York, a great cathedral town. Comparative peace reigned in England during the fourteenth century. This accounts for the great progress of the period, and we find much glass of this time in that veritable treasure house of art, York Minster. This was probably put in by William de Melton, an archbishop active in civil affairs, and one-time Treasurer of England. Fine glass of this period is to be found at Gloucester, due no doubt, to the burial there of the murdered Edward II, and to the donations by pilgrims to his shrine. Under Henry the fourth, with the nobles at the seat of war in France, and with the Concessions to the Commons, great impetus was given to the art, and fine work of this period is found in All Souls in Oxford. The best examples of the Renaissance period to be found in England, are at Litchfield and Hanover Square.

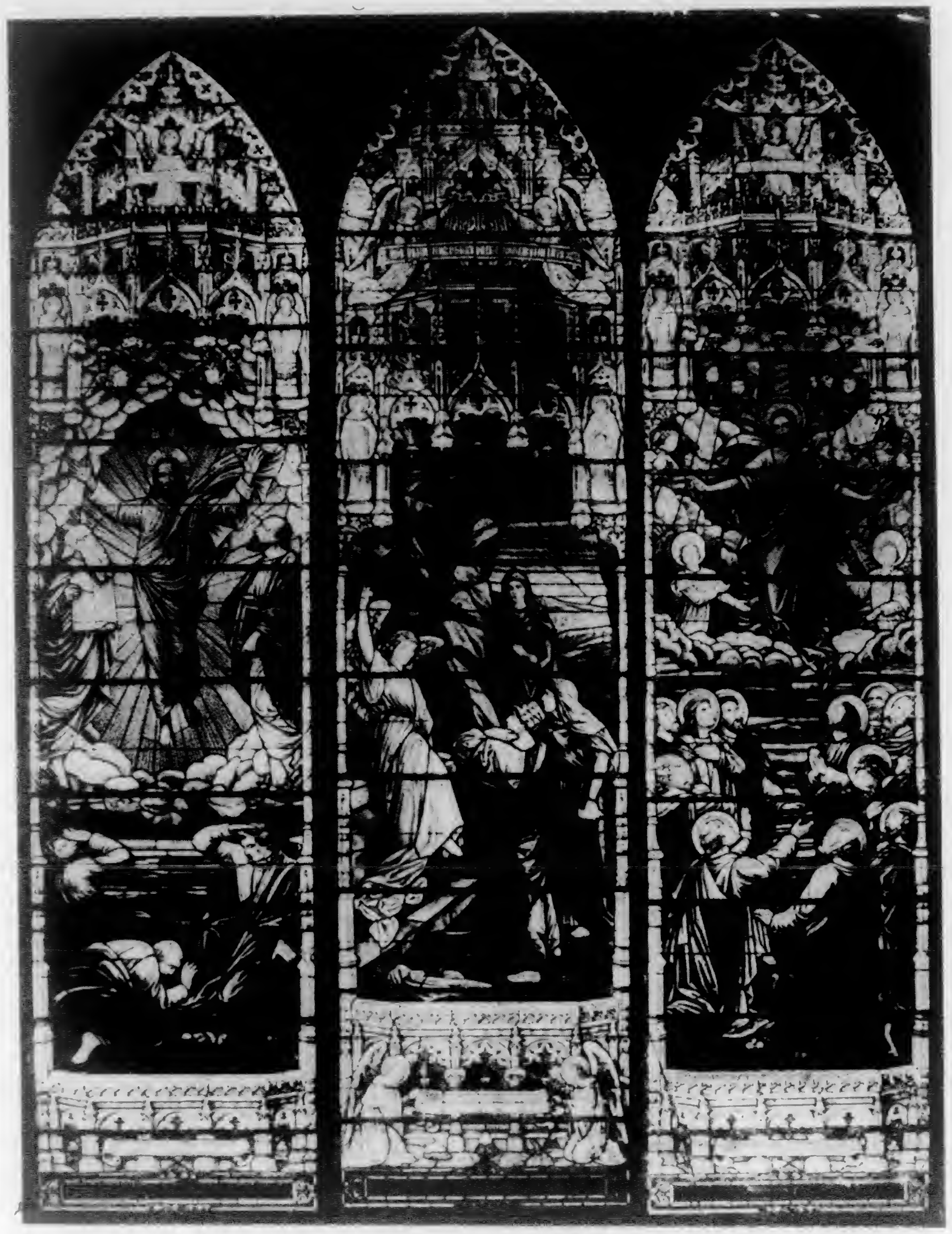
In Germany, early glass is found in Cologne and Strasburg. Toward the close of the thirteenth century German glass began to assert its great importance. However, as the Free Cities of the Empire were strong enough to form Leagues with which even princes had to reckon, it is not wonderful that in these cities (the seats of industry, and refuges from war and its unrest), the people prided themselves on the enrichment and glorification of their churches with the richest stained glass.

Strasburg was famous for its glass, Nuremburg also, and, too, the important trade cities of Regensberg and Freiburg.

During the fourteenth century the War of the Margraves broke the power of the cities; but the empire prospered, and this prosperity is chronicled in glass. Nuremburg, under Maximilian; Freiburg, the seat of the university; Ulin, a trade centre; and Cologne—always of ecclesiastical importance—have fine glass of this period. A lull in glass painting, due, no doubt, to the subsidence of the fervor of church decoration during the Reformation, occurs in Germany during the early part of the Renaissance period. Still we find that the Burgomasters of the Reformed cities of the United Netherlands, continued at Gouda the wonderful series of windows begun by Philip and Mary.

In Italy we find documentary mention of glass as early as the tenth century at Monte Cassino, and we know that there was a famous glass manufactory at Murano. But though we have some splendid examples of the fourteenth and fifteenth century work at Assisi, Florence, and at Pisa, yet but little glass of the fourteenth century exists today.

During the Renaissance period the prevalence of mural painting in Italy seriously hindered the growth of the art of stained glass; for it was not until long after this period that the improved glass and technique, made successful combination of the two practical. We find some instances, however, of where the French glass workers were invited to work with the great mural painters of that day—notably at Arezzo, and with wonderful results.



The Transfiguration, The Resurrection and The Ascension

These Windows Have Just Been Installed in Trinity Church, San Francisco by MacKay & Company

We have followed this story of glass from its beginning to the period of the Renaissance, when the great revival in the arts spread over the world, and the interchange of ideas and methods between nations became universal. From that day to the present the masterpieces of religious art have been reproduced in glass with ever-growing success and fidelity. This is due to study, to improved glass, to technique and methods. Often-

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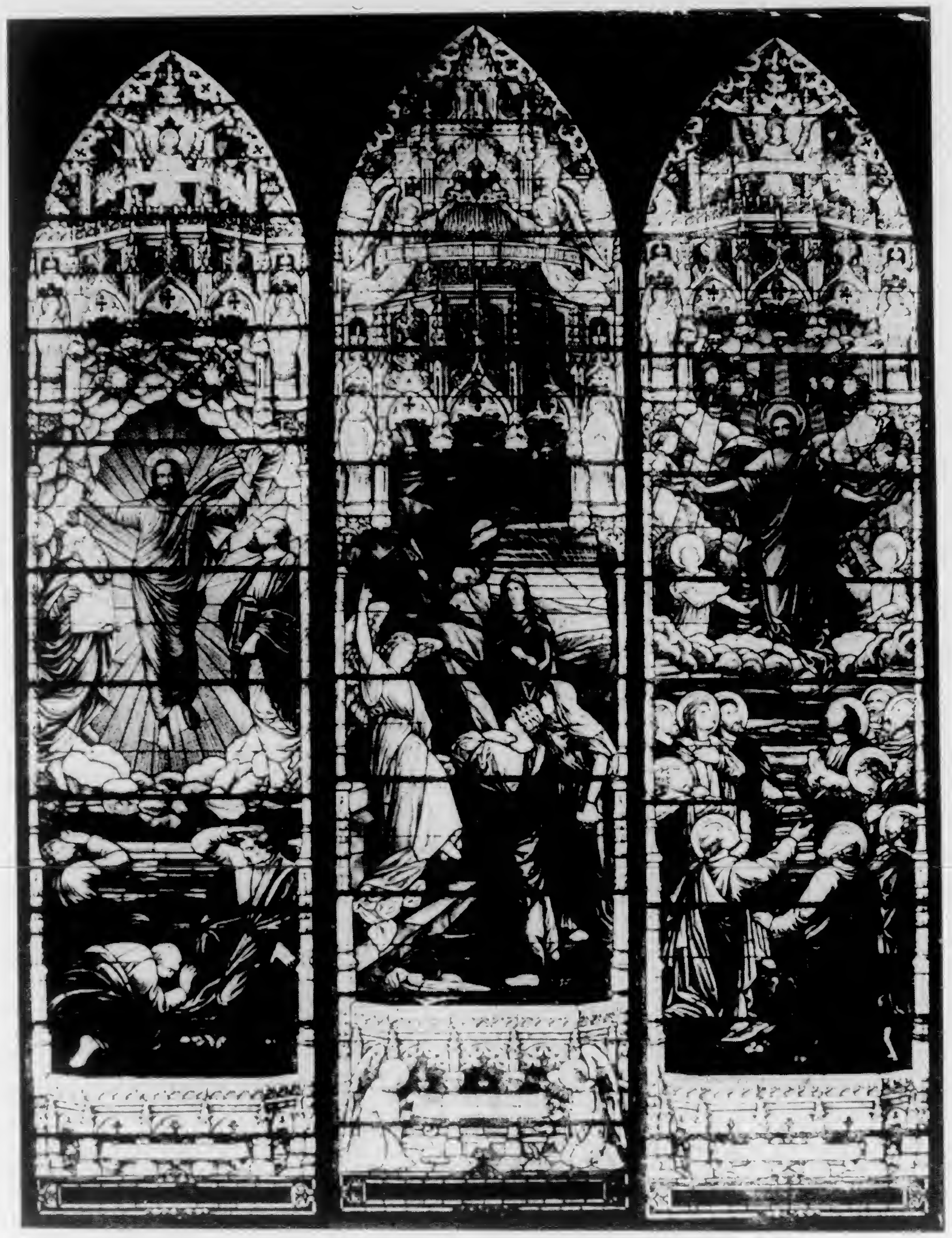

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Today, however, we are absolute masters of the materials we handle, and better, more true and more beautiful windows are produced than ever before. This country has evolved a method of its own; namely, the Mosaic method, by which means the designs are carried out in glass colored in the pot, painting being employed for the flesh-tints only.

The three windows just placed in Trinity Church, San Francisco, are the highest examples of true painted work. It is the writer's opinion that there are few windows, if any, in this country that excel them in beauty of design and coloring. The group of three windows represent great occurrences in our Lord's earthly life: The Transfiguration, the Resurrection, and the Ascension.

The "Transfiguration" is an adaptation of Raphaël's great painting, which now hangs in the Vatican. It was his last work, and is one of the greatest paintings in the world—probably the most celebrated. This scene is outside of our Lord's usual earthly experiences, and stands entirely apart from every other event during His ministry as a single extraordinary manifestation of His divine glory.

As we look at the window it seems, in its symbolism, to be, for the instant, a meeting place of Heaven and Earth; Heaven expressed in the wonderful glory and change in the appearance of our Lord, and earth in the deep shadows below on that lonely mountain top, the dazzled eyes of the three disciples, Peter, James and John. Moses and Elijah, representing the Law and the Prophets, appear at either side and bear testimony to His Divinity; symbolizing human immortality—two earthly lives continuing their existence in another world and preserving their identity. The whole scene may well be likened to a flash of lightning in a dark night, which for an instant reveals the world; or to the lifting of the fog at sea, showing a glimpse of a ship under full sail, and then closing down again. And so in the Transfiguration are we for a moment able to get a glimpse of the "glory that shall be revealed."

What a scene is represented in the "Resurrection Morning" window! This is an adaptation from the wonderful work of Axel Ender. Travelers from over the seas bring back glowing reports of a fine altar painting in the Cathedral of the little Norwegian town of Molde, the original from which this subject was taken. The dawn of a new day after the dark night, is beautifully brought out by the artist; the lights and shadows tell the story so that "he who runs may read"; it tells the story that makes perfect and complete the work of Redemption, for how incomplete would have been His ministry had it ended in the grave! Mary of Magdala, the other Mary, and Salome, coming early in the morning of the third day to the Tomb, find the stone rolled away, see an angel, the glory of whose presence fills the place, and who says unto them, "He is not here, He is risen." This was the dawn of the First Easter morning, and to the faithful women was given the blessed privilege of bringing the glad news to the sorrowing ones. In the distance is shown dark Calvary, and still farther away the city of Jerusalem, the rising sun throwing its rays over the housetops, symbolizing the "Light of the world" that dawned that day for all time and eternity. Love survives the world—the mighty power of Rome sealed the grave of our Lord, but a mightier Power broke the seal and rolled the stone away.

The words of Dr. Storrs of Brooklyn beautifully express this thought:

"Christ is risen; then the world is beautiful,—it is not a place of graves: it is a place of graves that are to be opened. It is not the city of the dead, it is a portal of Paradise; and there is a light upon it each Easter morning, such as never was before on sea or shore until the Master had risen from the grave."

As the prophecy of the Transfiguration was fulfilled in the Resurrection, so the Resurrection in turn is completed by the Ascension. The three incidents are indissolubly connected by our Lord's own words, and are happily made companion subjects in this series of windows.

"And He led them out as far as Bethany, and He lifted up His hands and blessed them, and it came to pass, while He blessed them, He was parted from them, and carried up into Heaven." The artist has chosen for his subject the moment of last vision, just before the "cloud received Him out of their sight." The calm, serene faces of the apostles are beautiful in their symbolism, having lost all traces of the agonized sorrow with which they witnessed the Crucifixion. They are sure and safe in the knowledge of a risen Lord and comforted by His last words and the words of the two angels, who said, "Ye men of Galilee, why stand ye gazing up into Heaven? this same Jesus, which is taken up from you into Heaven, shall so come in like manner as you have seen Him go into Heaven."

The Ascension brings to a close the great story of the Incarnation. But of the history of the church it is but the opening chapter—a thought symbolized in the window by the footprints of the Lord, and the message this brings is clear and strong, that our Lord has left His indelible impress with and upon us, and that we should ever walk in His footsteps, led by Him, who gave as His parting promise, "Lo, I am with you alway, even unto the end of the world."

* * *

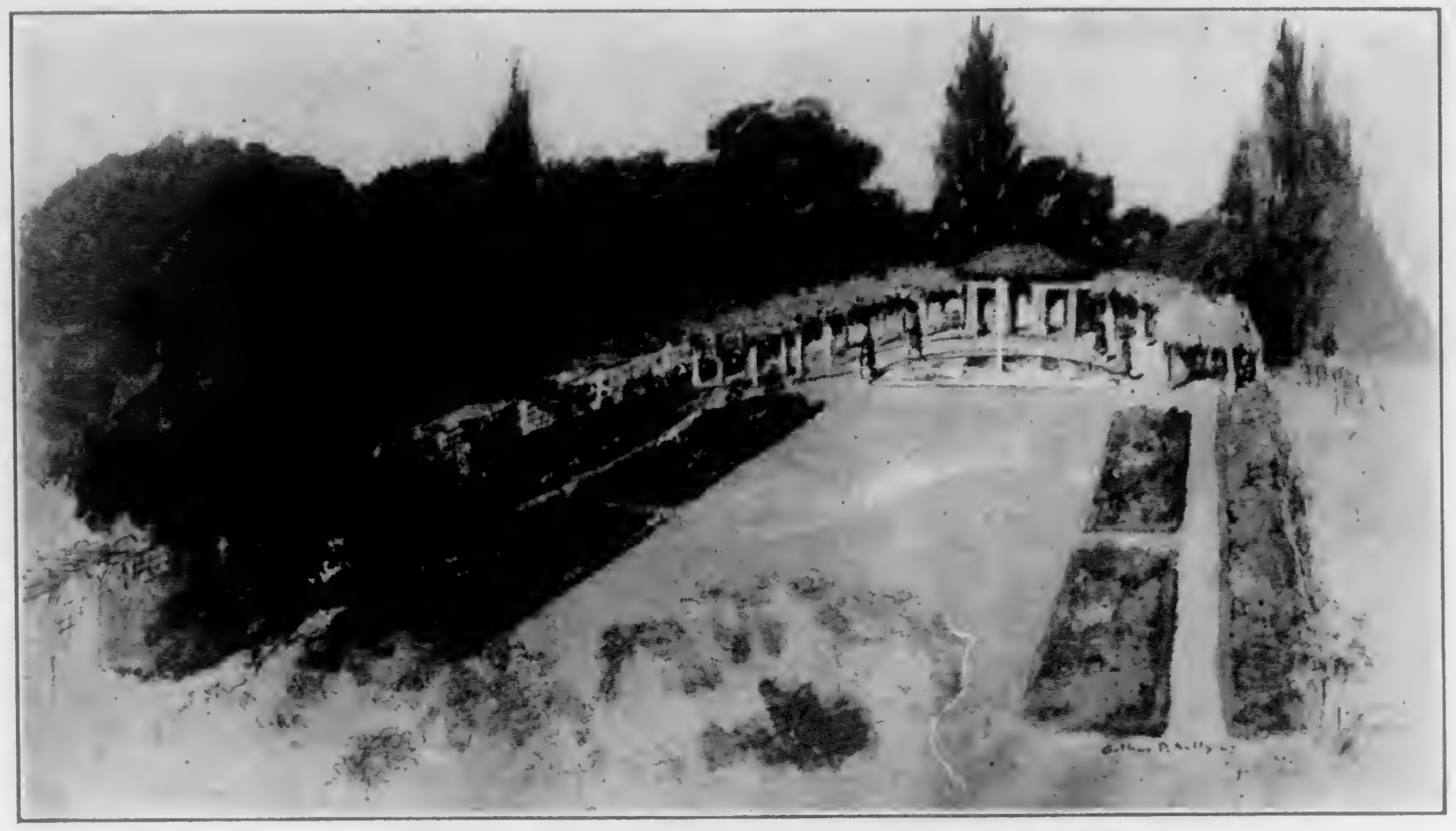
Brick Versus Stone

WE OFTEN hear the statement that all bricks are alike, and that almost any brick is fit to use in a building if properly laid. It is, however, never safe to assume that a brick is enduring and suitable for building operations unless we know its composition. The most potent factor which must be guarded against is the presence of salts of magnesia. It is only a question of time when bricks in which these salts are present in any appreciable quantity will be badly influenced by the weather, and we have seen bricks, which, when fresh from the kiln, gave every mechanical evidence of being of best quality so shattered and disintegrated by the combined effect of moisture, frost, and the chemical action of the magnesia, that a knife could be thrust straight into them with very little effort. Fortunately, there is so much good clay in this country, and so many thoroughly reliable brick manufacturers, that there is really no excuse for bad bricks ever being used, but any brick is not necessarily a good brick, and as much care and intelligent discretion must be used in the employment of this material as in connection with any building medium. There is a common conception that granite is one of the most enduring stones, but as a matter of fact most granites would be outlived by thoroughly first quality hard burned brick. A pure syenite, free from iron or mica, constitutes the most enduring of the granites. A granite quarry may have good stone in some portions of the deposit and be utterly worthless in others, and as a general rule it is not safe to use a granite unless the architect knows absolutely its composition and the part of the quarry from which it is taken. Sandstone is really a bad building material. The cementing material in sandstone has a very slight value, and it is probably the poorest material extensively used, as far as resisting the action of frost is concerned, while the presence of iron constitutes an almost fatal defect. It may be said also that very little sandstone is free from iron.—Exchange.

BRONZE STATUE of ROBERT BURNS.

The statue has been placed in Golden Gate Park, San Francisco. It weighs more than a ton and was cast at the foundry of Louis De Rome, to whom the sculptor Earl Cummings, sent the original pattern. The statue, with the granite base, cost between $15,000 and $20,000 and has been pronounced a marvelous representation of the famous Scotch poet.

Bronze Statue of Robert Burns. the Scotch Poet



Old Fashioned Garden. Howard E. Huntington Estate. Pasadena. Cal. Wilbur David Cook. Landscape Architect

The Howard E. Huntington Estate

By WILBUR DAVID COOK, Landscape Architect

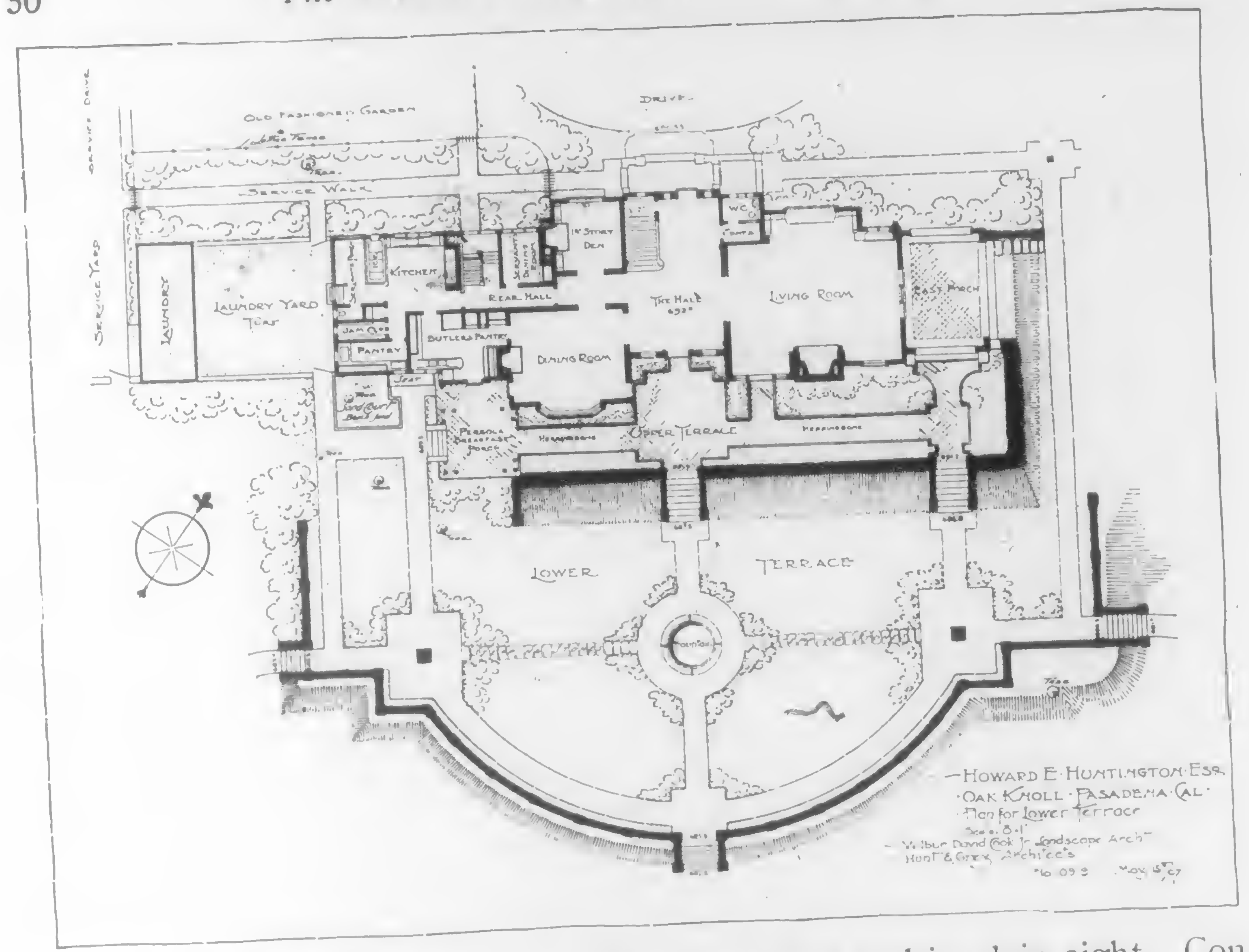
THE writer was called upon to prepare plans for the development of this estate at Oak Knoll, Pasadena, and as the problem was a typical foothill proposition, it may be of interest to note how it was treated. The site is a magnificent one consisting of twelve acres of undulating land heavily wooded on its boundaries with a fine growth of live oaks and pepper trees.

On the east the property runs down to a picturesque wooded cañon; the west boundary is formed by the county road known as Pepper Drive. The recently constructed electric railway line leading by the Hotel Wentworth cuts the south boundary and the Perkins' estate (owned by Mr. Huntington's sister) forms the northern boundary.

An inspection of the topographical map No. 1 will give an excellent idea of the existing conditions, but unfortunately it cannot give any idea of the extensive view commanded by the residence from this site. It is enough to say that the angle of view embraces over 180°, sweeping over the valley below with its well kept orange groves to snow capped Old Baldy in the distance, taking in the Santa Monica mountains in front and terminating at Mt. Lowe.

The approach and service drives as shown on the topographical map had been constructed by the owner when he called for help. The only thing that can be said in their favor was that they were on grade, and that they avoided the trees. The approach drive as constructed was convenient of access in coming from Pasadena, but exceedingly inconvenient of approach from Los Angeles, the line of most frequent traffic.

To reach the service drive one was obliged to enter at the main entrance, follow the approach drive for half its length, turn to the right and follow this drive to its terminating loop, which left the service vehicles



standing within twenty-five feet of the front door and in plain sight. Conceive the pleasure of arriving or departing guests being compelled to encounter the garbage wagon, ice wagon, coal wagon, etc.

These driving lines then as constructed were stiff, awkward and inconvenient. It was at once apparent that they should be given some character, made more convenient of access, and that the service drive should be sharply separated from the approach drive and its entrance and that it should terminate in a service yard as far removed from the front door as possible and yet be conveniently accessible to the service end of the house. To still further separate these two drives it was proposed to locate the Old-fashioned and the Japanese Tea Gardens where shown on the general plan. Fortunately, too, this was the only available location for a garden of this character, and as the existing view from the house in this direction was rather uninteresting, it was desirable to create a vista here, where it would not conflict with the magnificent views from the south terrace.

The terminating loop of the approach drive as constructed extended so far to the east as to destroy the privacy enjoyed by the occupants of the east porch and it was decided to pull it back as shown. It was also necessary to provide for a garage, yard and drive to be convenient of access from Los Angeles. The garage was located on the north boundary line as shown on plan, amid a grove of live oaks and screened from view from the Pepper Drive, and it is proposed to plant an orange grove as indicated. The vegetable garden is to be located just east of the garage.

These various drives were constructed practically on grade and with the loss of but one tree.

A system of circuit walks were then planned as shown, accessible to the car line at the south, skirting the edge of the woods connecting with the Perkins' estate through the cañon. A separate entrance walk was also provided for the servants' use, leading from the Pepper Drive to the service yard.

In looking up at the house from the south boundary the rise of the hill intercepted the line of view, cutting off the lower portion of the house and causing it to strike about midway of the windows on the second floor. To overcome this difficulty as far as possible a lower terrace was constructed to be enclosed with a low balustrade.

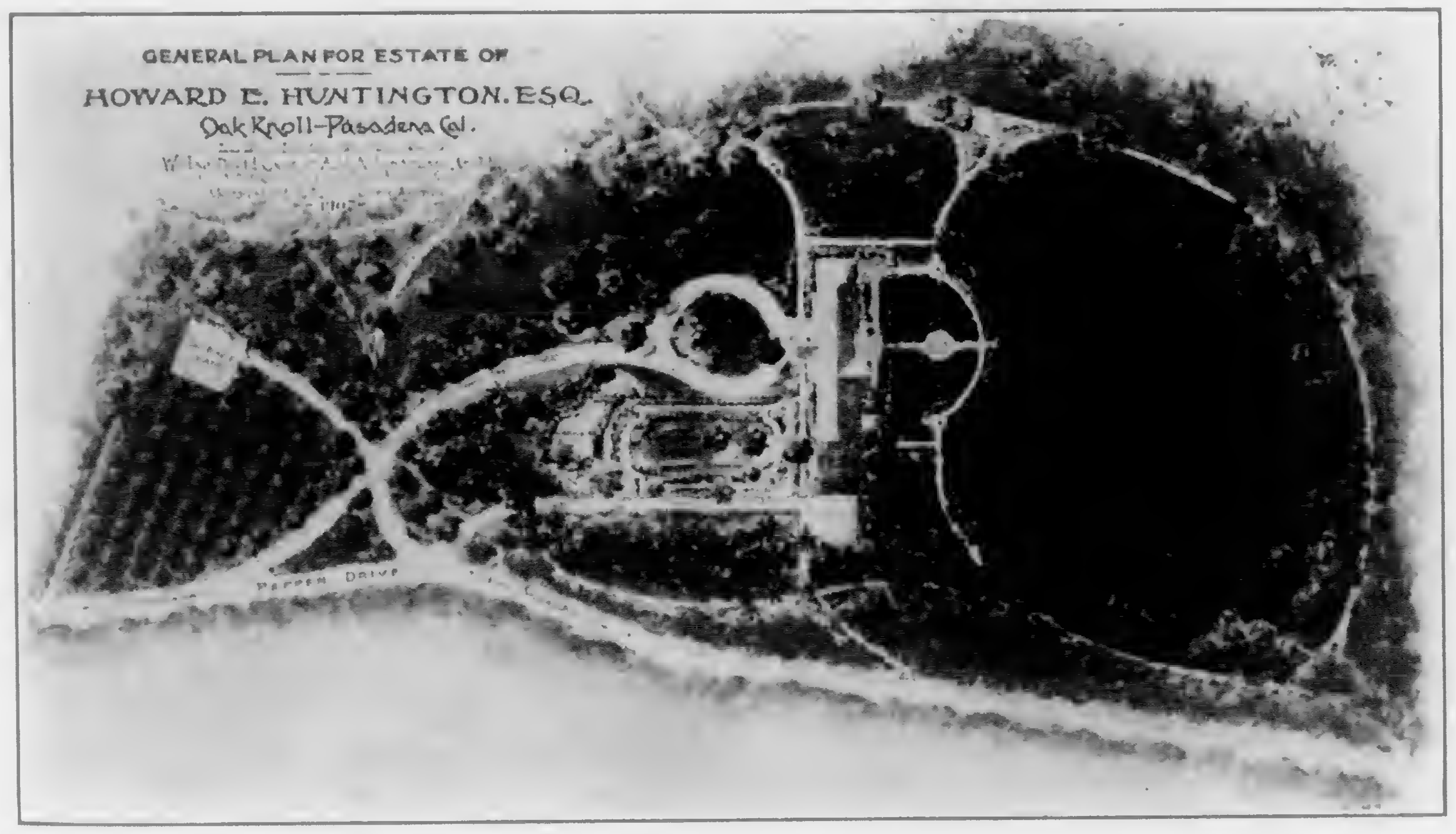
It was also desirable to limit the area of well-kept lawn by well defined lines of fixed construction.

The entire treatment of this lower terrace was designed to be quiet, simple and dignified, without floral display or with any features calculated to distract the attention from the restful, magnificent view to be secured from this point of vantage.

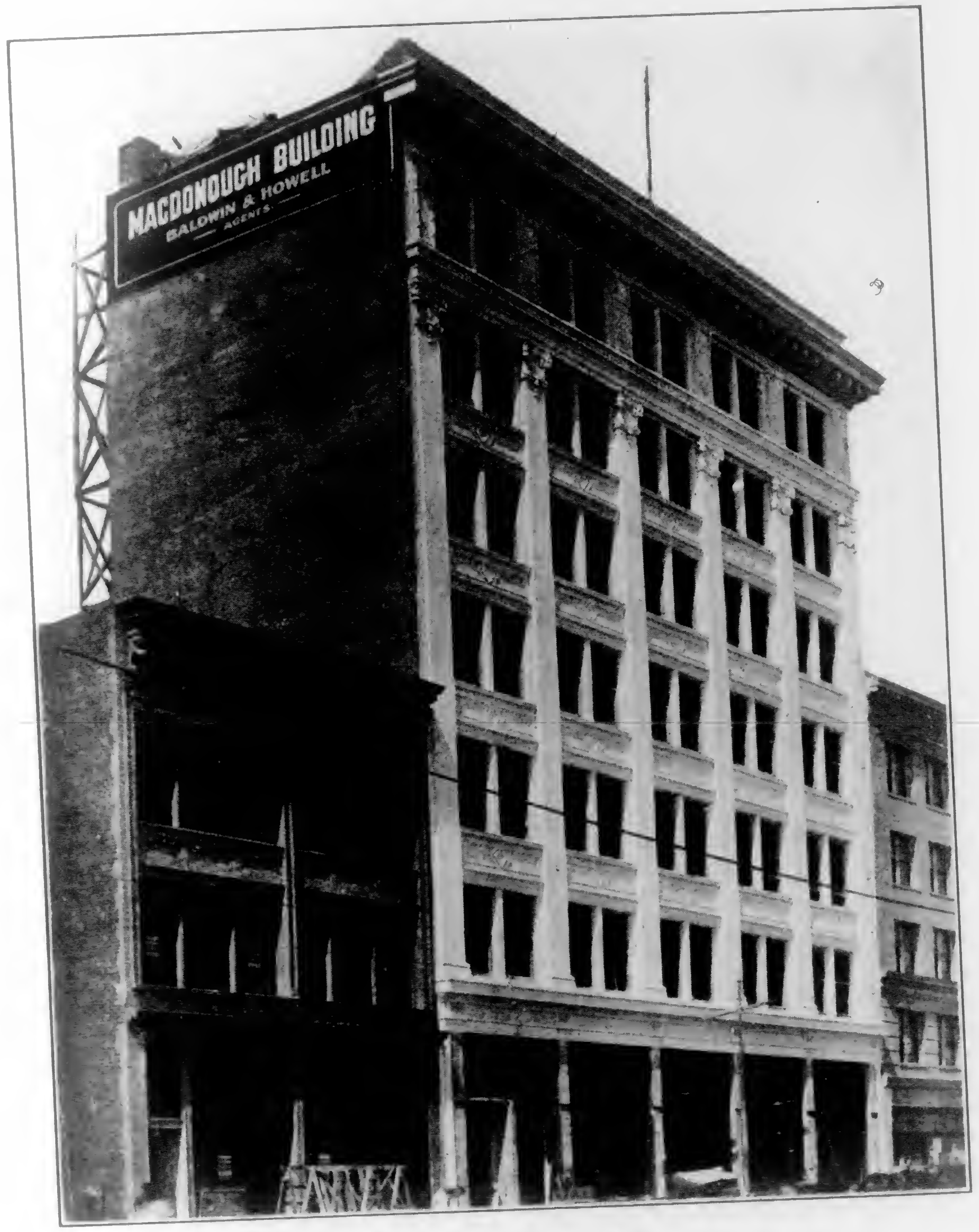
In closing we wish to say just a word with reference to the Old-Fashioned Garden and Japanese Tea Garden. These gardens are to be surrounded with an artistic lattice fence of redwood, oiled and in color scheme to match the house. The walls were kept straight for perspective effect and are to be edged with box edging, as are also the flower beds, which are to be filled with phlox, thyme, sweet william and other old-fashioned flowers. The old fashioned garden terminates in a semi-circular eucalyptus pergola meeting a palm thatched tea house in the center. The entire structure is to be covered with roses. The tea house is given a pleasing setting by the installation of a fountain basin, as shown in sketch. The central space was kept open as a parterre and the centre of this space will be occupied either by a sun dial or a croquet lawn.

A trellised backing is to be provided for the pergola and tea house to sharply separate the two gardens, so dissimilar in character as to require such separation. Access to the Japanese Tea Garden to be secured by passing through the tea house out over a rustic bridge spanning a small lotus pool, in which will be found aquatic plants and goldfish. Here, also, will be found such Japanese plants as are hardy to this climate. This miniature garden was planned to provide a place which would be absolutely private and secure from intrusion.

The house was designed by Hunt & Grey, architects, of Los Angeles.



General Plan for Estate of Howard E. Huntington. Pasadena, Cal.
Wilbur David Cook, Landscape Architect



The Macdonough Building, San Francisco
William Curlett, Architect *John B. Leonard, Engineer*
Equipped with Otis Elevators *Thompson-Starrett Co., Contractors*

The Macdonough Estate Building

By W. P. DAY

A RECENT acquisition in the building line in San Francisco is the seven story Macdonough building, the property of the Macdonough Estate Company, situated on Kearny street, between Bush and Pine. It is of the reinforced concrete type of construction throughout, 101 feet high from the sidewalk, with a frontage of 86 feet on Kearny street and extending 38 feet 5 inches to the street line in the rear ; the sidewalk is 18 feet in front and 4 feet in the rear. The available floor space in the building is approximately 31,200 square feet.

The structure is supported by 18 columns and pilasters, most of which are in three sizes, and all reinforced with longitudinal bars and wrapped with one-quarter-inch wire at variable pitch, consistent with the stresses to which the columns are subjected. Six of the columns are placed on the regulation stepped footings for distribution, reinforced as shown in the typical detail. The use of turned up shear bars was resorted to in order to preclude the possibility of the columns' punching through their respective footings. The column rods are placed upon a cast iron plate embedded in the footing. Six of the 12 remaining columns have their outer sides on the lot line, and their respective loads are balanced by those of six interior columns, with a slab shown herewith in detail.

The live loads used in computing the floors were as follows:

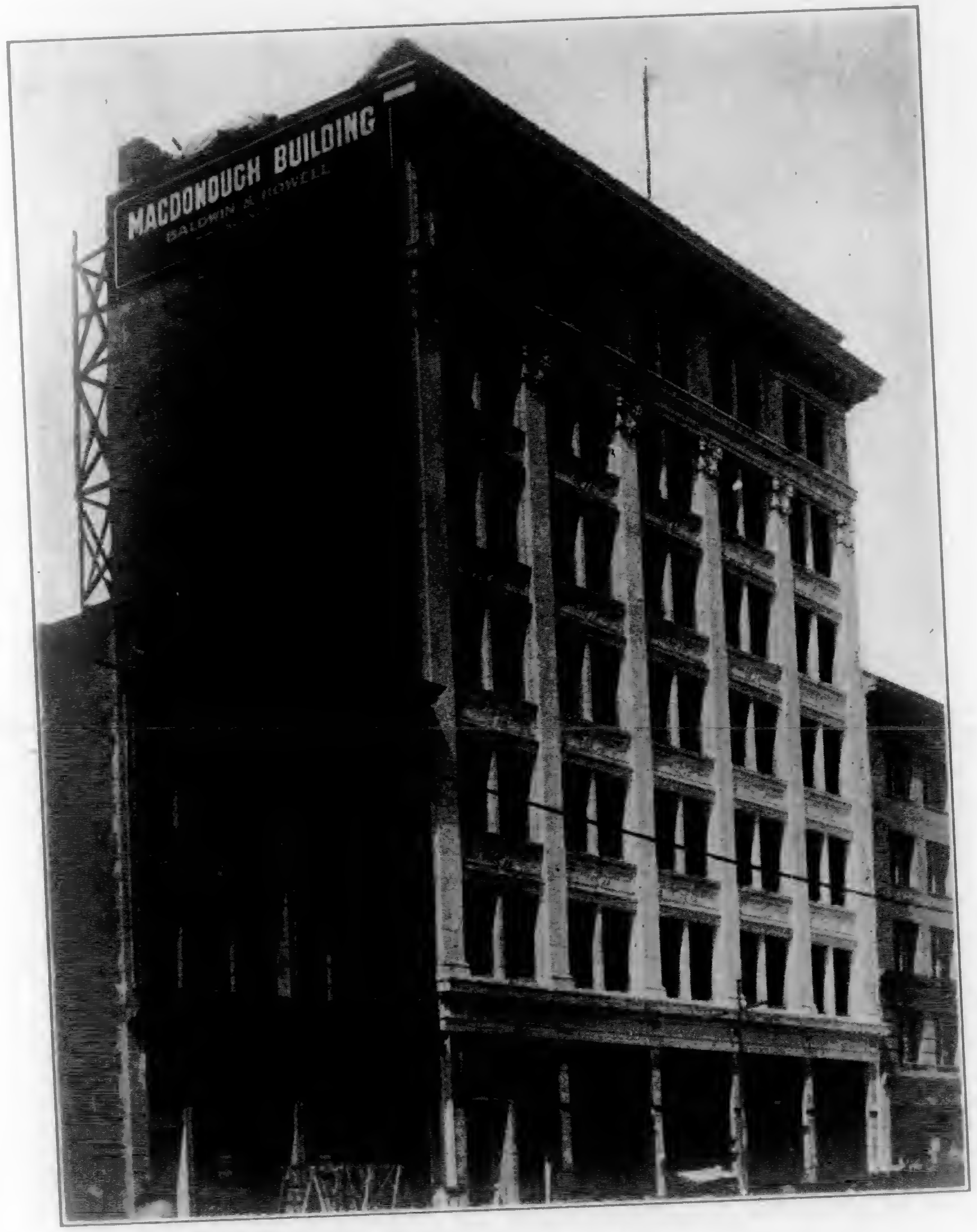
Roof	50	lbs.	per	sq. ft.
Typical floor.	75	"	"	"
First floor...	150	"	"	"
Sidewalk ...	300	"	"	"

A reduction of the live load was made in designing the columns and foundations, as allowed by the San Francisco Building Ordinance. During the progress of the work the first floor was loaded over one panel with a pile of rock eight feet high. The resulting deflections were inappreciable. Curtain walls were made 6 inches thick and plastered on the outside with a three-quarter-inch cement mortar of equal parts of cement and gravel.

A little more than 1800 cubic yards of concrete were used in the construction, the mixture up to and including the first floor being one of cement, two of sand and 4 of broken rock; above this floor the mixture used was one of cement, three of sand and three of broken rock, the latter mixture giving a denser concrete. Hilton's cement and what are locally known as beach sand, blue rock (¾") and Napa gravel were used throughout. The quantities of materials used in the structural portion, exclusive of finish on floors, were approximately:

600	loads	of	rock
270	"	"	gravel
250	"	"	sand

Each floor and the basement were finished with three-quarter-inch cement mortar, one to one, and required, in the aggregate, about 75 loads of gravel, 15 loads of sand and 650 barrels of cement. Concrete in the columns was poured to the bottom of the haunches on the beams and allowed to set for at least 24 hours, when pouring was resumed until the beams and slab were completed. All beams were provided with haunches. All concrete was mixed in a cone gravity mixer.



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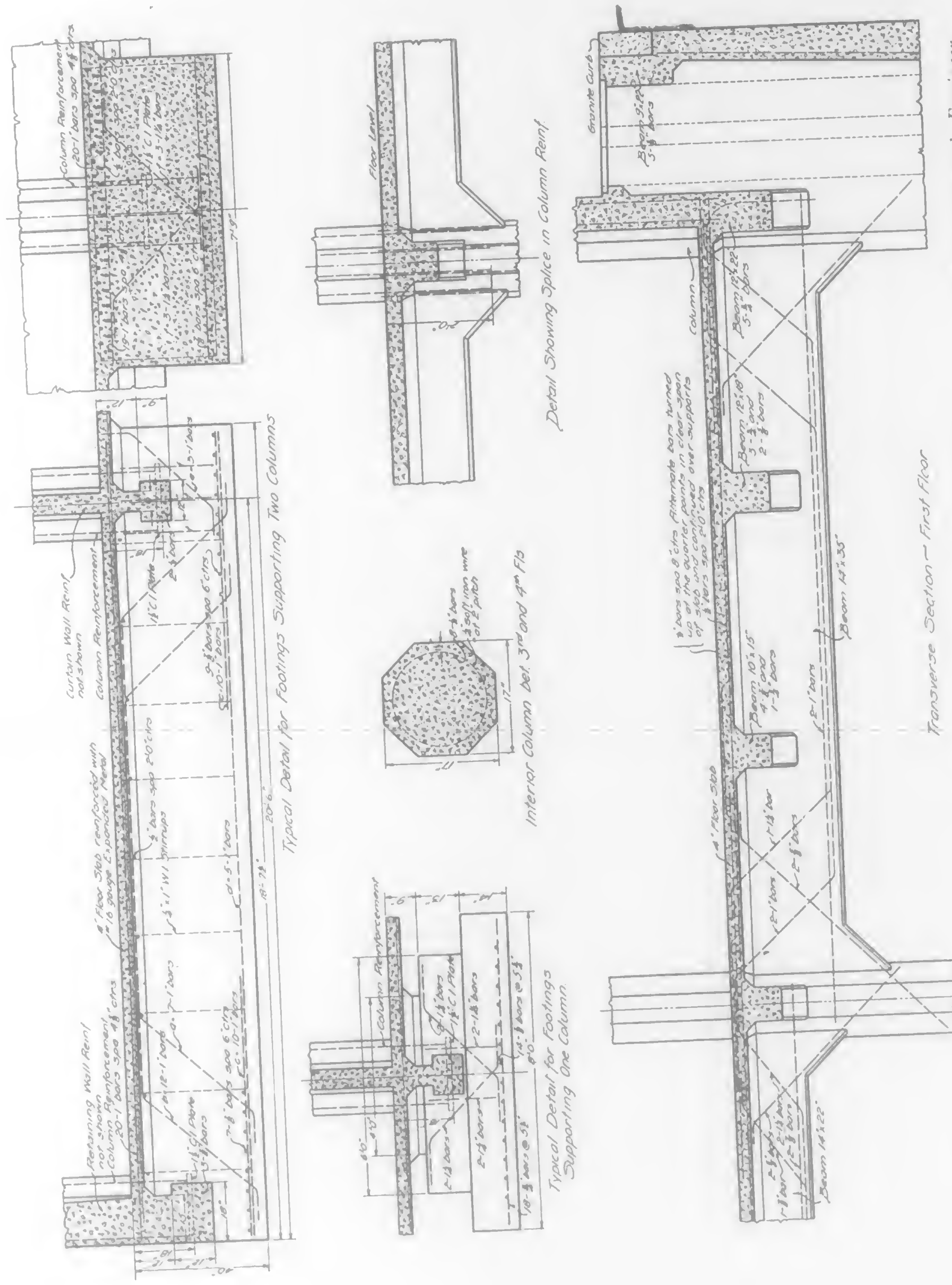


Typical Detail for Footings Supporting Two Columns

Detail Showing Splice in Column Reinf.

Interior Column bet. 3rd and 4th Fls.

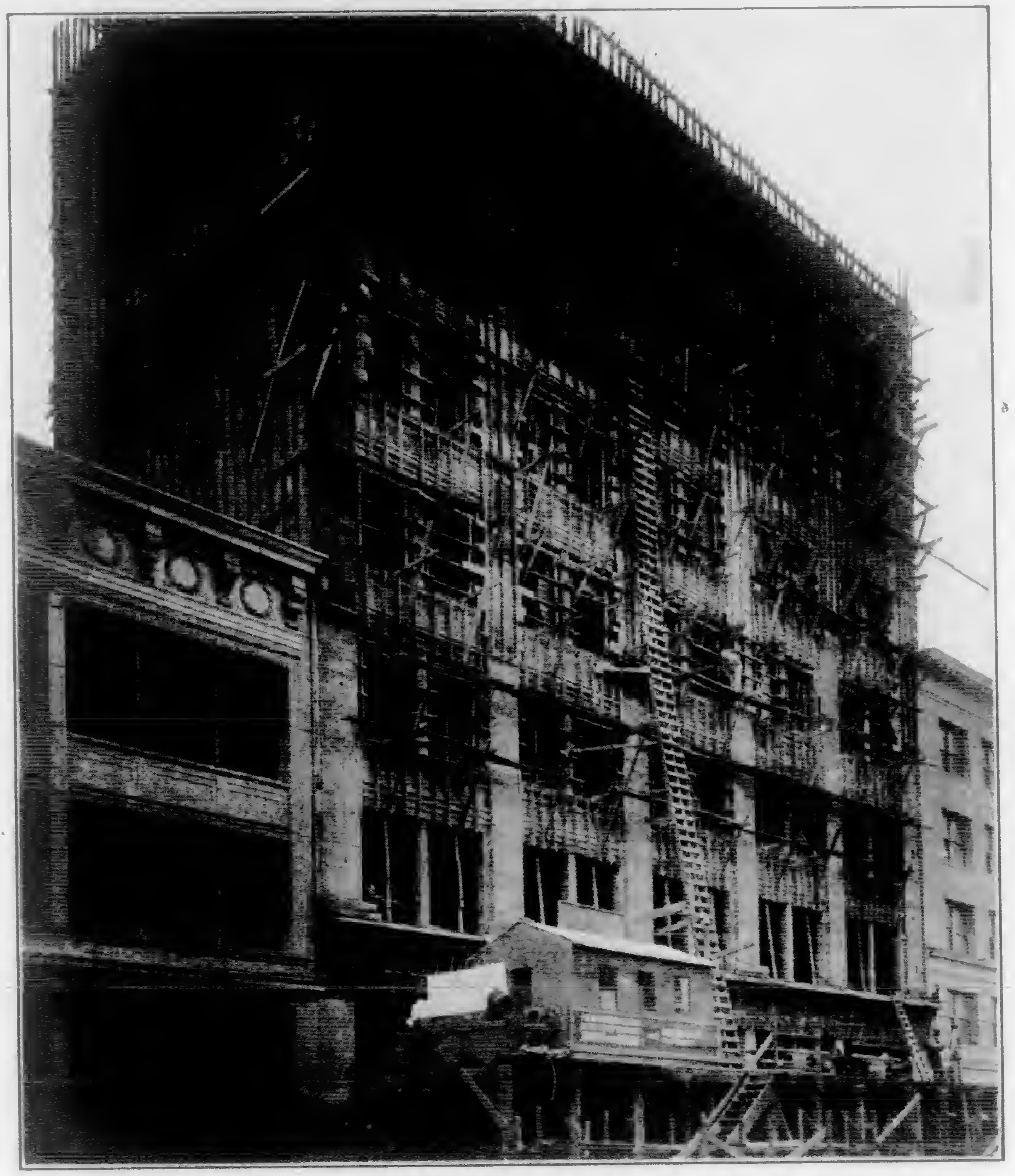
Typical Detail for Footings Supporting One Column

Transverse Section — First Floor

The Macdonough Building, San Francisco

William Curlett, Architect

John B. Leonard, Engineer

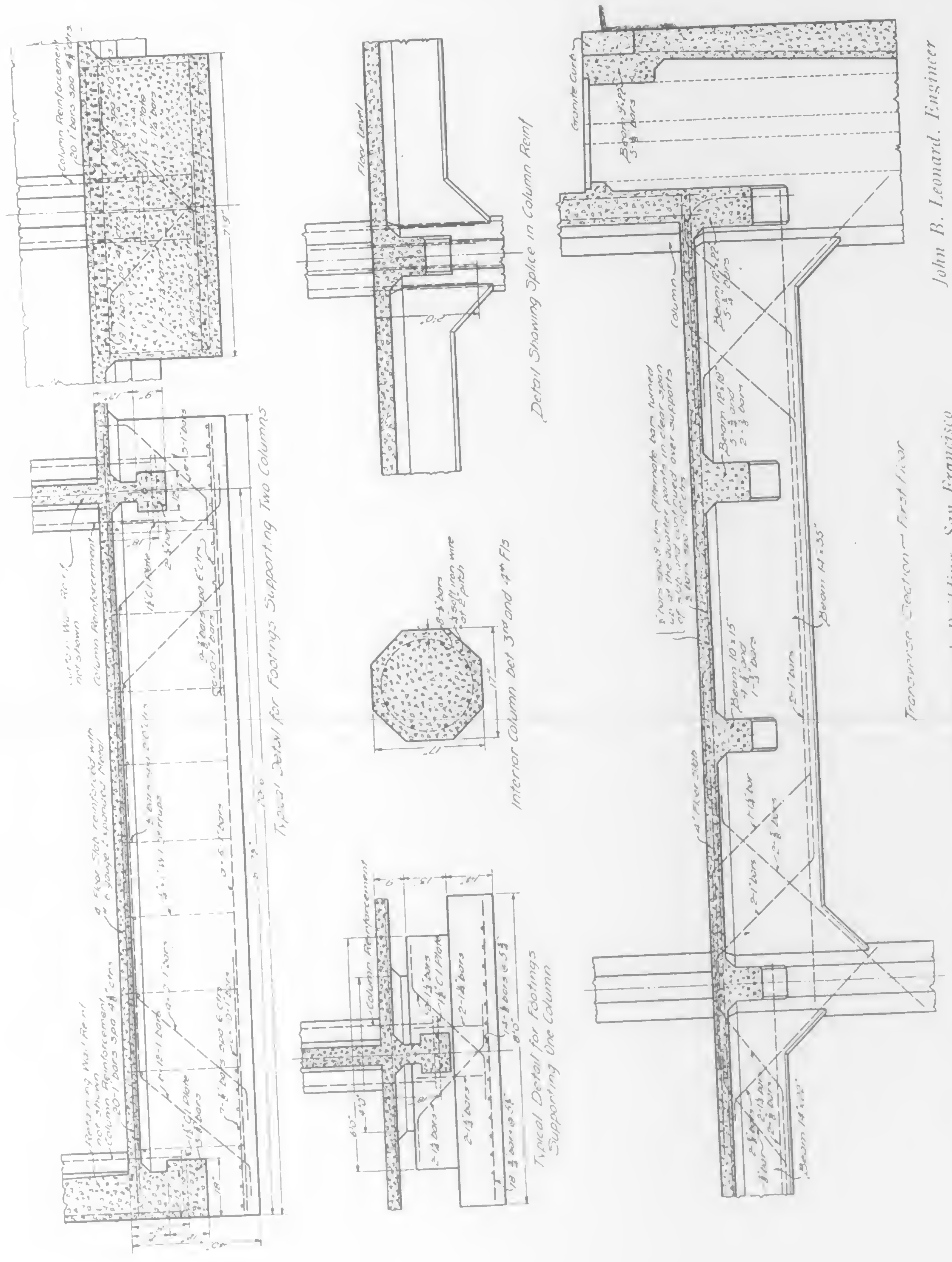


The Macdonough Building, San Francisco

View From Kearny Street, Taken Four Months After Excavation Was Begun; Note That Five Sets of Forms Are Used

The reinforcement consisted of New Style Corrugated Bars, about 140 tons being used in the structure. All bars up to three-quarter inch were bent cold; larger bars were heated in a hand forge.

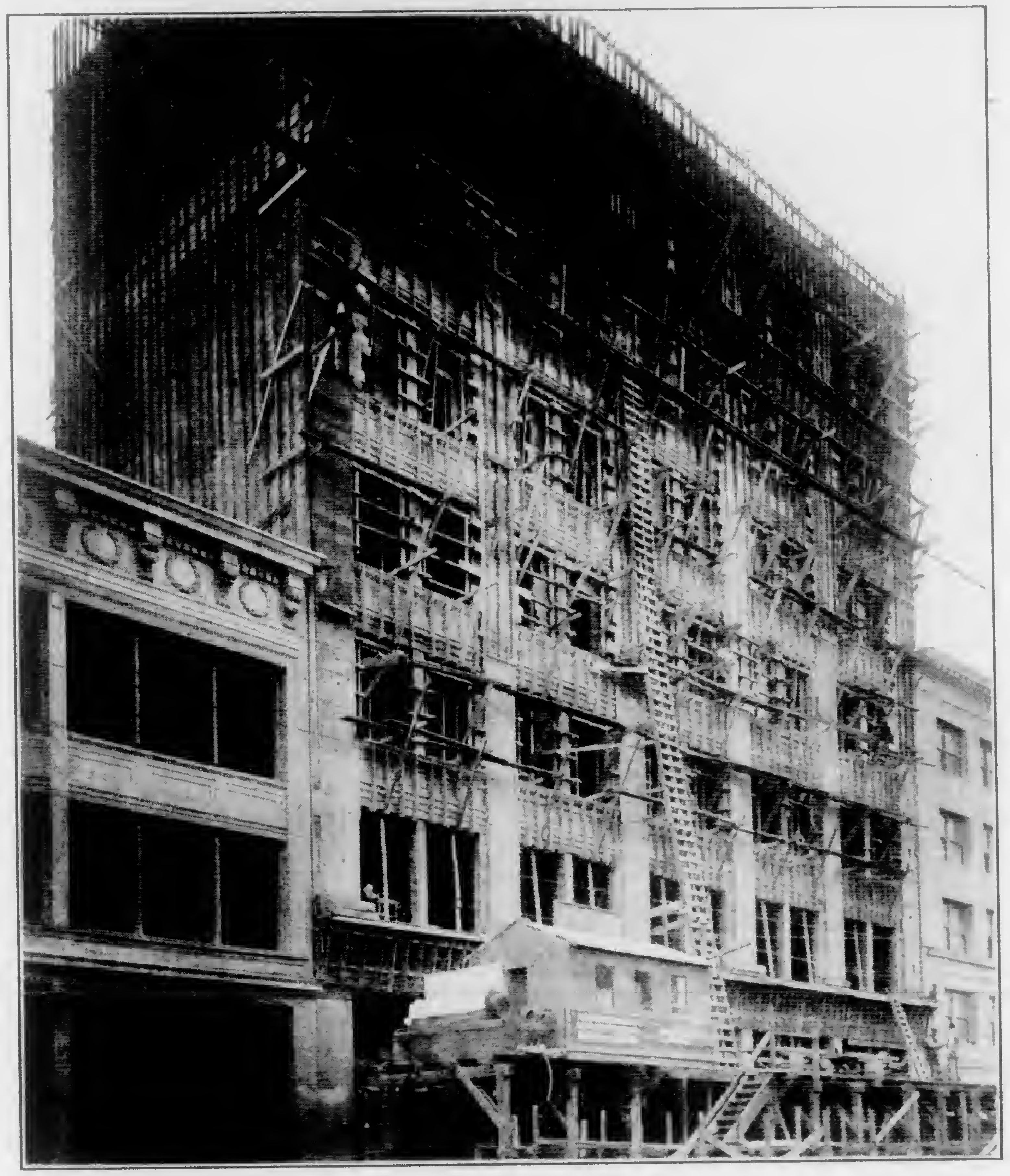
As an aid to the accurate placing of the steel for the floors and in order to raise the bars off the forms, three-quarter-inch strips of timber were placed at intervals to support them; on stripping, these were removed and the space filled in. The longitudinal reinforcement of the columns was wrapped with wire, by feeding the core as it revolved on a horizontal axis. The wrapped core was then set in vertical position in its prescribed place in the building and the form built around it. The connection of all column rods occur just below each floor and is accomplished with a lap only. Typical details for the position and bending of the reinforcement are shown on the detail sheet.


Typical Detail for Footings Supporting Two Columns
Detail Showing Splice in Column Point
Interior Column bet 3rd and 4th Fls
Typical Detail for Footings Supporting One Column
Transverse Section—First Floor
Beam 12 x 35"

John B. Leonard, Engineer

The Macdonough Building, San Francisco

William Curlett, Architect



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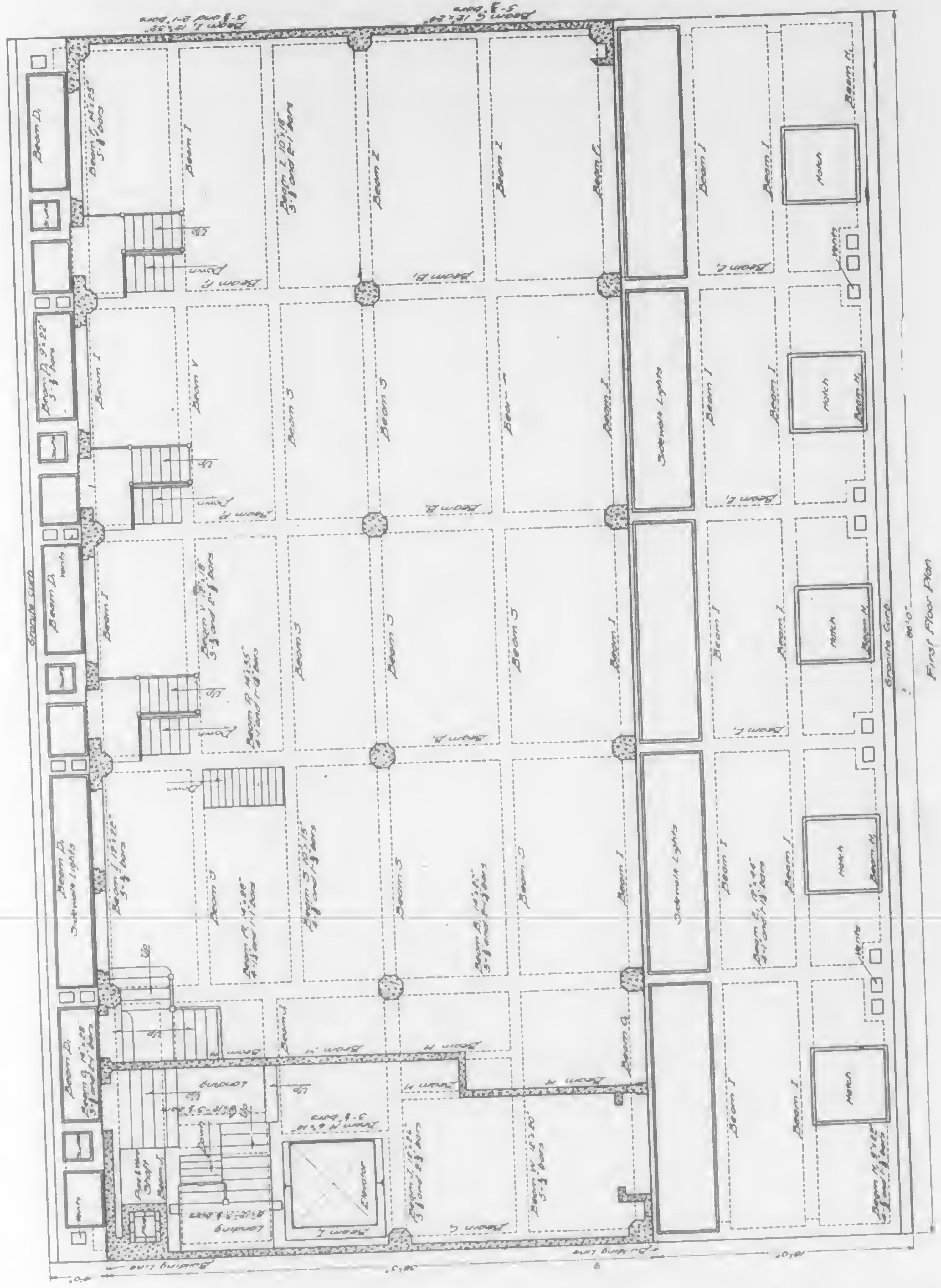

The Macdonough Building, San Francisco
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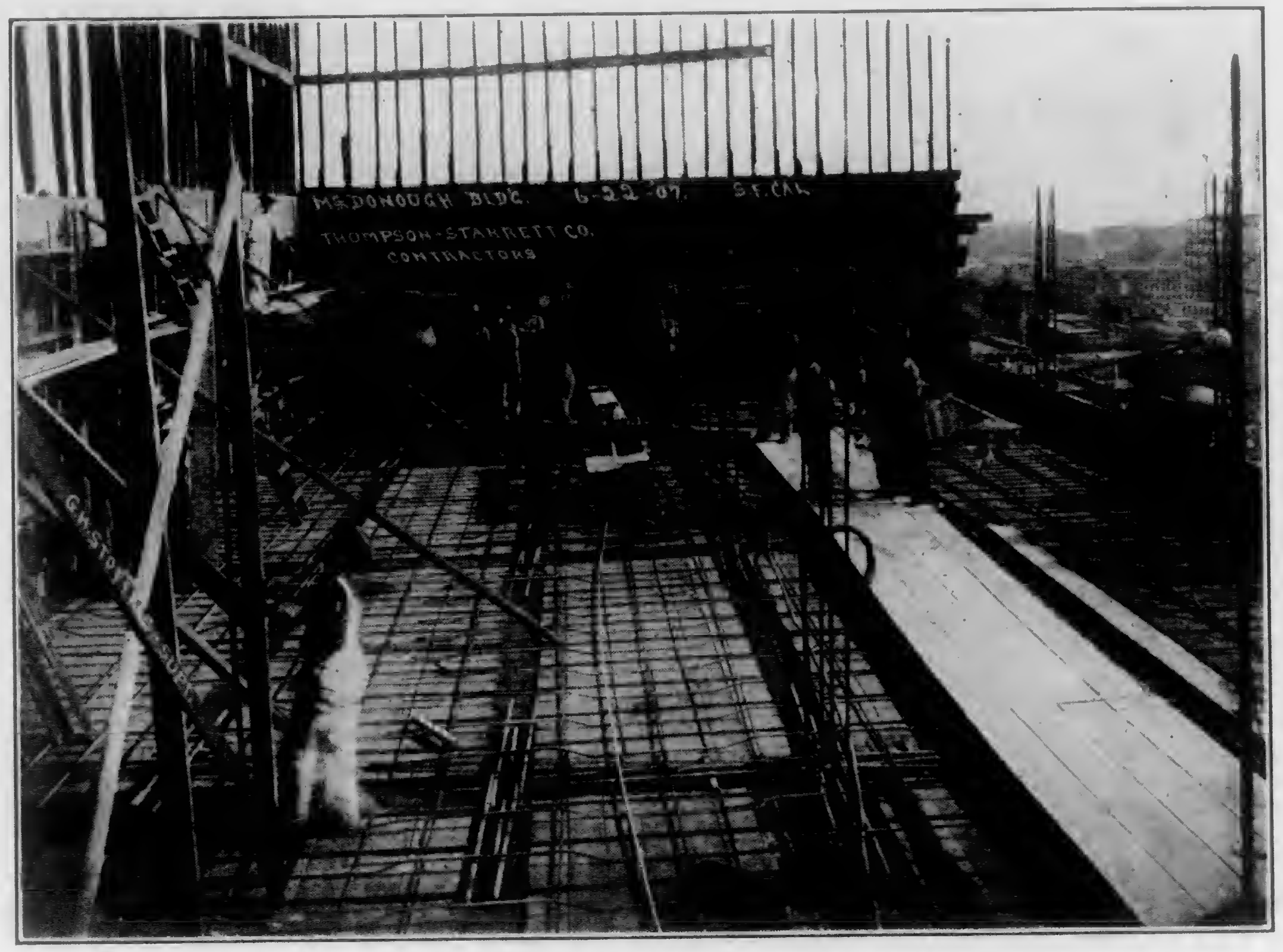


The Macdonough Building, San Francisco
Partial View of the Seventh Floor, Showing Steel Bars in Position

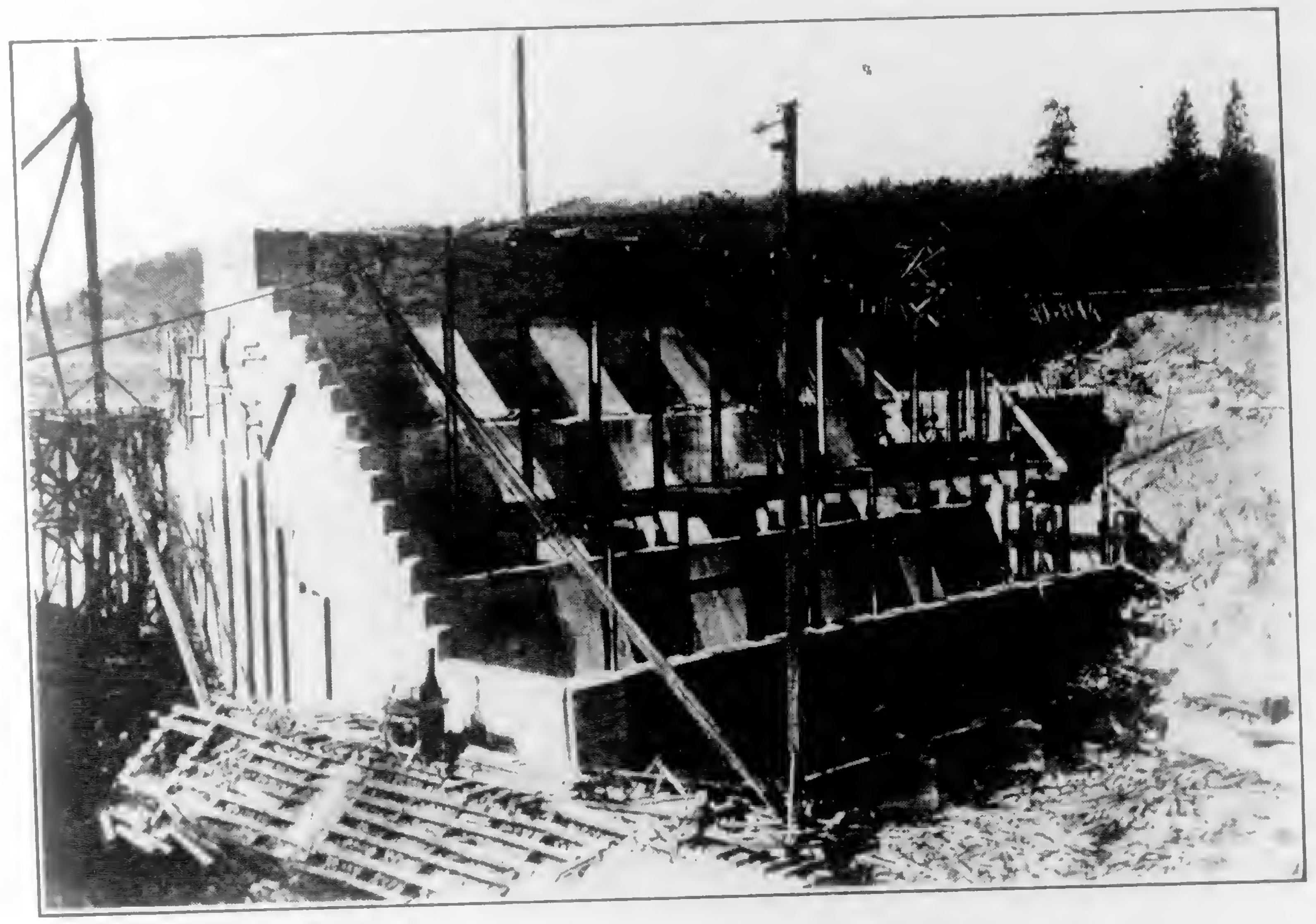
Approximately 200,000 feet of lumber were used for form work in the entire structure. That portion of the concrete next to the forms became soaked and did not set as rapidly as expected. It became necessary to keep the forms in place for 28 days, which required the use of five sets of forms, one story being completed each week. In some cases, after the lapse of 28 days, the removal of the forms disclosed more or less green concrete. This explanation is given with view to accounting for the rather abnormal amount of timber for forms used. All beams were made one-quarter inch less in width at the bottom than at the top, with the idea of facilitating the removal of the forms. It is claimed, however, that this detail renders little or no assistance as far as the removal of the timber is concerned, but in the particular case at hand, the timber was in such sizes as to require this detail, regardless of any assistance it might render in the stripping. The lumber for all beams was surfaced on one side. For the slabs and columns one-inch material was used, and two-inch for the remainder, all of Oregon pine.

Carpenters were paid $5.00 per day of eight hours.

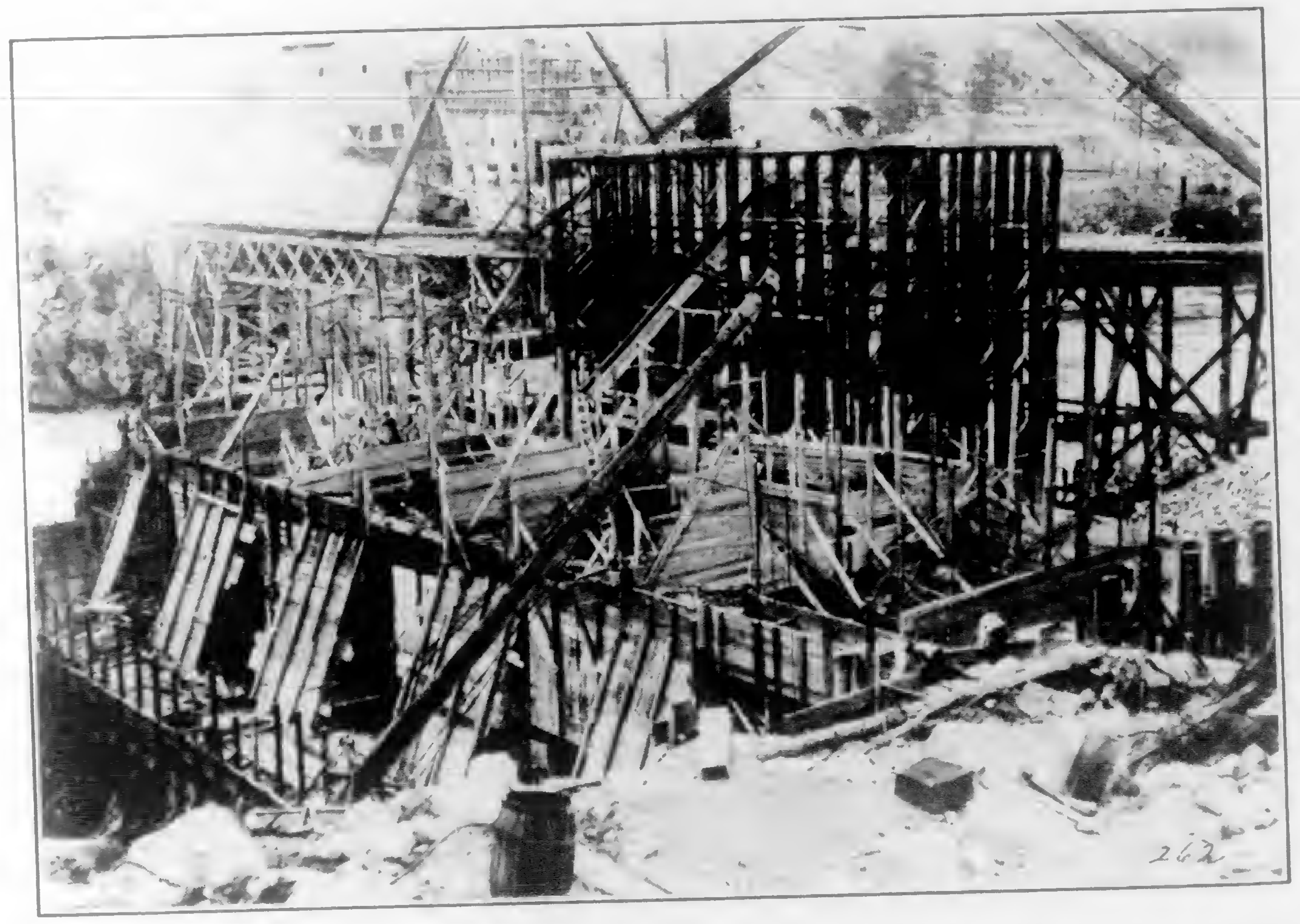
As stated elsewhere, the two sides on the lot lines are surfaced with cement mortar, three-quarter inch thick. The front and rear are finished with materials, the composition and character of which are unknown to the writer. It appears that marble dust, cement, and sand have been used and with much success. The result is a pleasing white enamel-like finish. In the interior, suspended ceilings are used and columns and walls are finished in plaster throughout, one-half inch thick on the columns. Wire, No. 10 gauge galvanized, on three feet centers suspended from the floor is used to carry the ceiling.

Excavation for the building was started on January 31, 1907, and the foundations were completed March 12, 1907. After the completion of the first floor and the mezzanine, one floor was finished each week, the fire wall and pent house being completed July 3rd, making about five months for the structural part of the building. This portion of the work was built at an approximate cost of $49,000, not including the surfacing of the floors. The basis of the contract for the erection of the building was the cost plus a percentage scheme. William Curlett was the architect, John B. Leonard the engineer, and the Thompson-Starrett Co., contractors. The contractors' superintendent on the job was George H. Stoffels.

The real estate firm of Baldwin & Howell were the agents for the owner. After a thorough investigation of the various types of structures in which Mr. Baldwin took particular interest, the owners accepted their agents' advice in adopting reinforced concrete construction.



Progress Work on the New Power Plant and Dam. Spokane and Inland Railroad
Sanderson and Porter. Engineers. F. N. Sylvester: Contractor



Progress Work on the New Power Plant of the Spokane and Inland Railroad: to Cost $1.000.000
Sanderson and Porter. Engineers

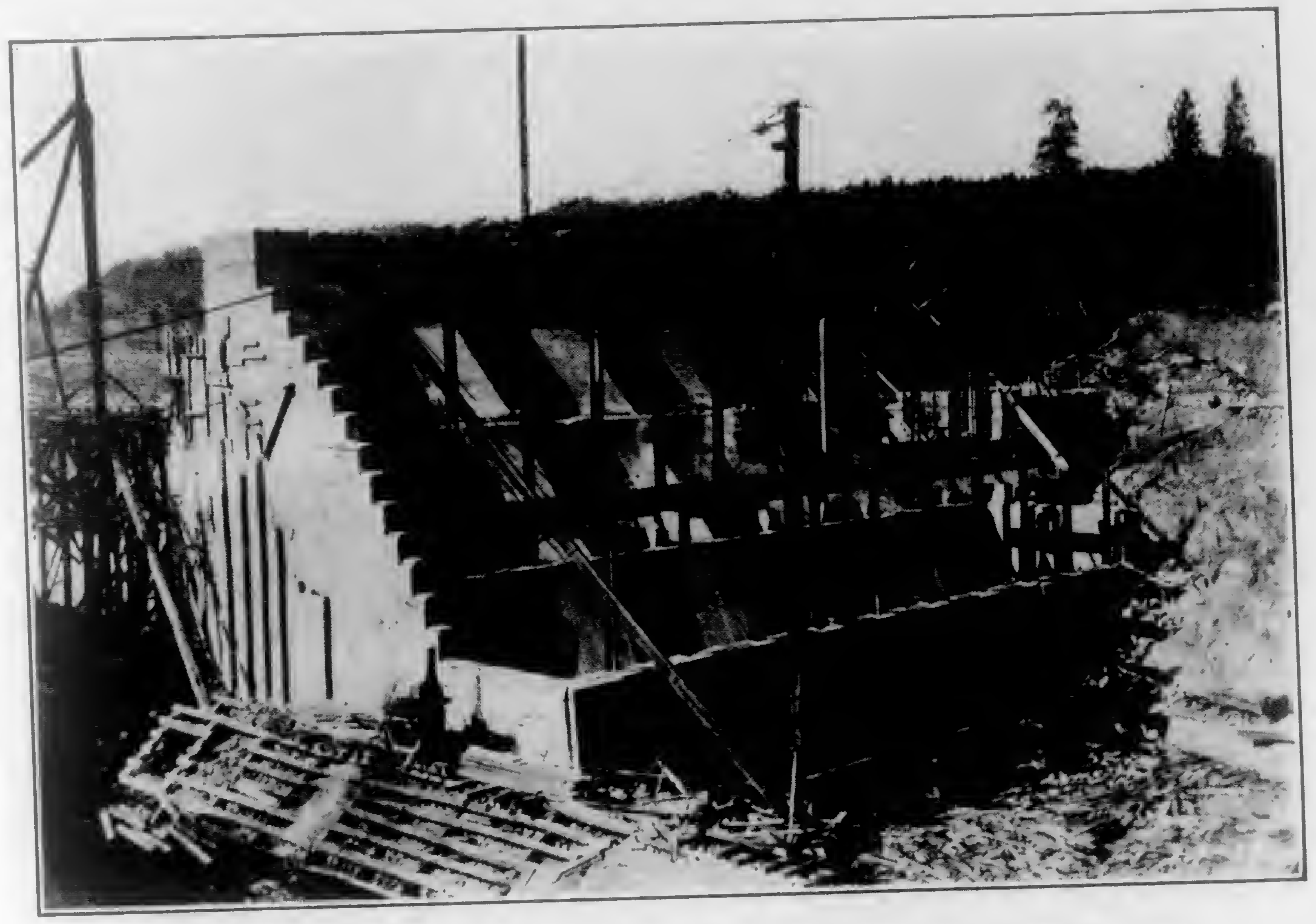
Efflorescence on Concrete

EFFLORESCENCE is the term applied to the whitish or yellowish accumulations which often appear on concrete surfaces. "Whitewash" is another name given to these blotches. Efflorescence is due to certain salts leaching out of the concrete and accumulating into thin layers where the water evaporates on the surface. These salts are most probably sulphates of calcium and magnesium, both of which are contained in many cements and both of which are slightly soluble in water. Efflorescence is very erratic in its appearance. Some concretes never exhibit it; in some it may not appear for several years and in others it shows soon after construction and may appear in great quantities. The most effective way to prevent efflorescence would naturally be to use cements entirely free from sulphates, chlorides or whatever other soluble salts are the cause of the phenomenon, but the likelihood of engineers resorting to the trouble of such selection except in rare instances is not great, even if they know what cements to select, so that other means must be sought.

The most common place for efflorescence to appear in walls is at the horizontal junction of two days' work or where a coping is placed after the main body of the wall has been completed. The reason of this seems to be that the salt solutions seep down through the concrete until they strike the nearly impervious film of cement that forms on the top surface of the old concrete before the new is added and then they follow along this impervious film to the face of the wall. It has been suggested that this cause might be remedied by ending the day's work by a layer whose top has a slight slope down toward the rear of the wall or perhaps by placing all the concrete in similarly sloping layers. Mr. C. H. Cartlidge is authority for the statement that this leaching at joints can be largly done away with by the simple process of washing the top surface of concrete which has been allowed to set over night by scrubbing it with wire brushes in conjunction with thorough flushing with a hose.

But efflorescence frequently appears on the faces of walls built without construction joints and in which a wet concrete is puddled in and not tamped in layers, and here other means are obviously essential. Waterproofing the surface of the wall should be effective so long as the waterproofing lasts; indeed, one of the claims made for some of these waterproofing compounds is that efflorescence is prevented. Failing in any or all of these methods of preventing efflorescence the engineer must resort to remedial measures. The saline coating must be scraped or chipped or, better, washed away with acids.

Efflorescence was removed from a concrete bridge at Washington, D. C., by using hydrochloric (muriatic) acid and common scrubbing brushes; 30 gallons of acid and 36 scrubbing brushes were used to clean 250 sq. yds. of concrete. The acid was diluted with 4 or 5 parts water to 1 of acid; and water constantly played with a hose on the concrete while being cleaned to prevent penetration of the acid. One house-front cleaner and 5 laborers were employed and the total cost was $150, or 60 cts. per square yard. This high cost was due to the difficulty of cleaning the balustrades. It is thought that the cost of cleaning the spandrels and the wing walls did not exceed 20 cts. per square yard. The cleaning was perfectly satisfactory. An experiment was made with wire brushes without acid, but the cost was $2.40 per square yard. The flour removed by the wire brushes was found by analysis to be silicate of lime. Acetic acid was tried in place of muriatic, but required more scrubbing.—Engineering-Contracting.



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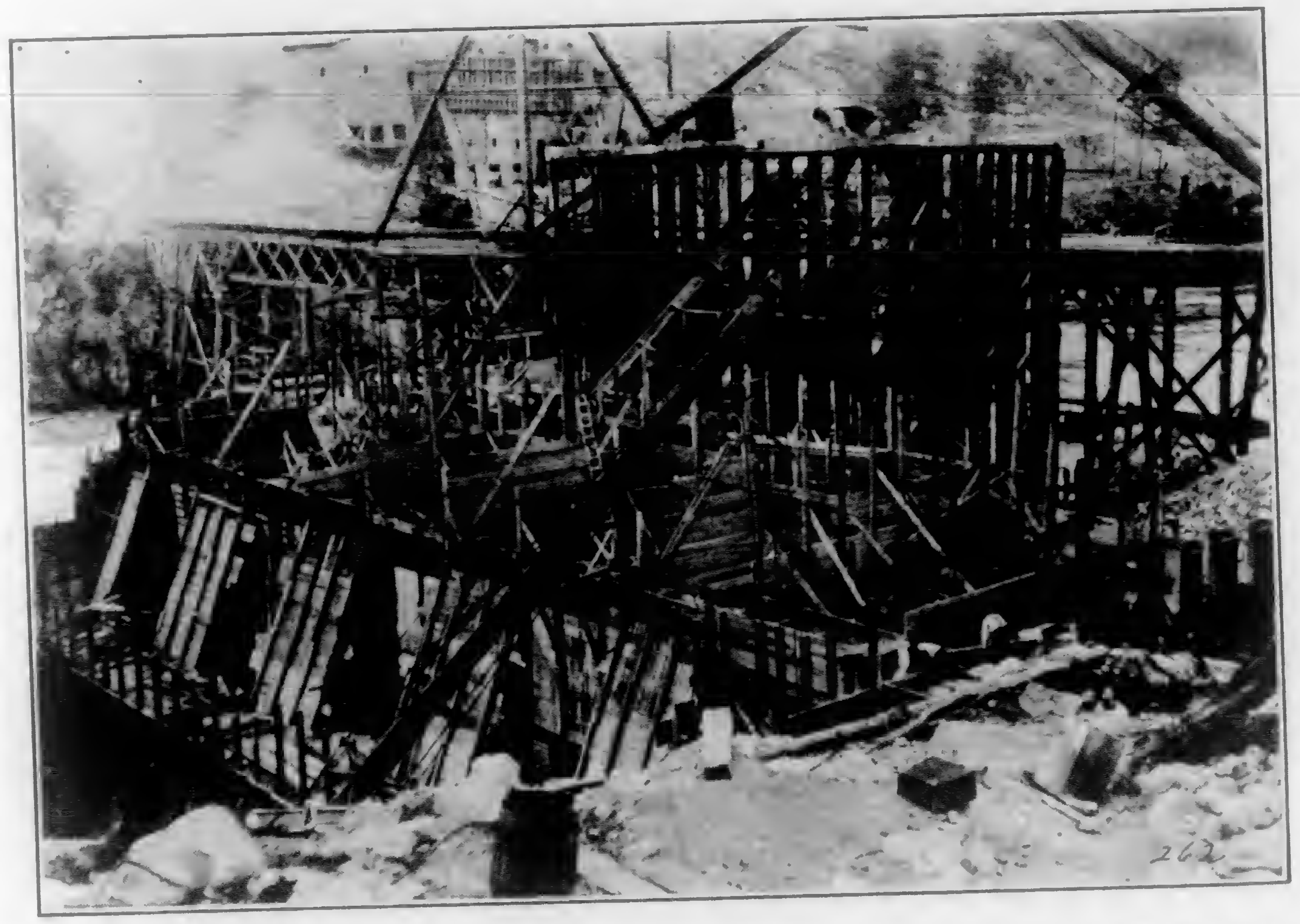

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A Mystery Unveiled

MANY persons have admired the painting on the proscenium arch of the Herald Square theater, but if any one should take the trouble to inquire who the artist was he would find no answer to his question. The contractor who had charge of the redecorating of the theater some four years ago doesn't know the name of the man, nor do any of his fellow workmen. The painters were at work when a middle-aged man, who was strolling down Broadway, stopped to watch them. He stepped inside and asked for the boss painter.

"Don't you want something nice over that arch?" he asked.

"Yes. Are you a painter by trade?"

"That's my business," replied the stranger, "and I think I could do a nice picture up there if you'll let me. If you don't like it you can paint it out and not pay me anything."

"All right," replied the boss. "We pay $4 a day. When can you go to work?"

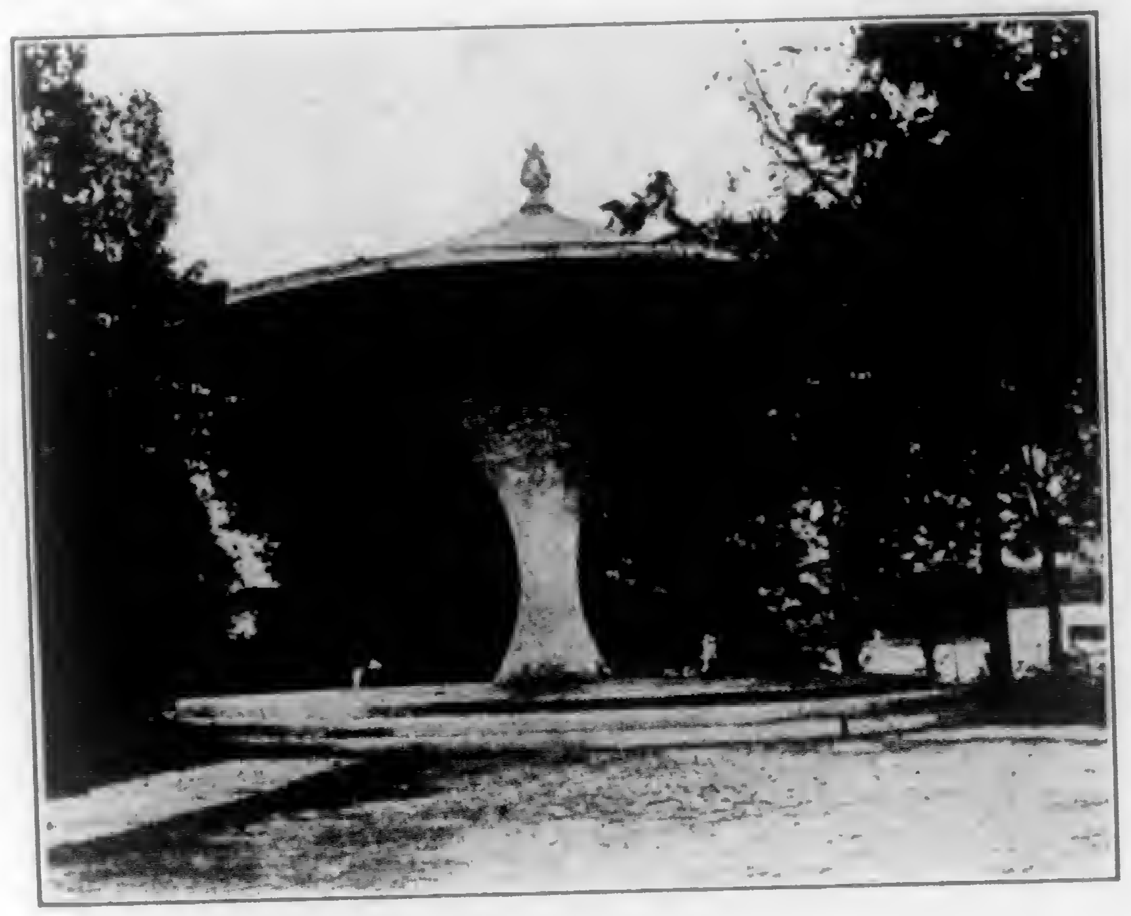
"Tomorrow morning," replied the stranger, and he was as good as his word. Equipped with white overalls, he was on the job the next morning, and in two days he had finished one of the prettiest pieces of decorative painting to be found in any New York theater. Then he asked for his $8, got it and went his way, refusing the boss painter's offer of a steady job.

A few days ago several artists were sitting in an uptown cafe when one of them told this story. "I was the painter," he added. He was Charles L. Whipple, the portrait painter, who gets anywhere from $5000 up for every piece of work he does. "It was the cheapest job I ever did," he added, "and I have the satisfaction of knowing I can always get a job if I need one."—N. Y. Globe.

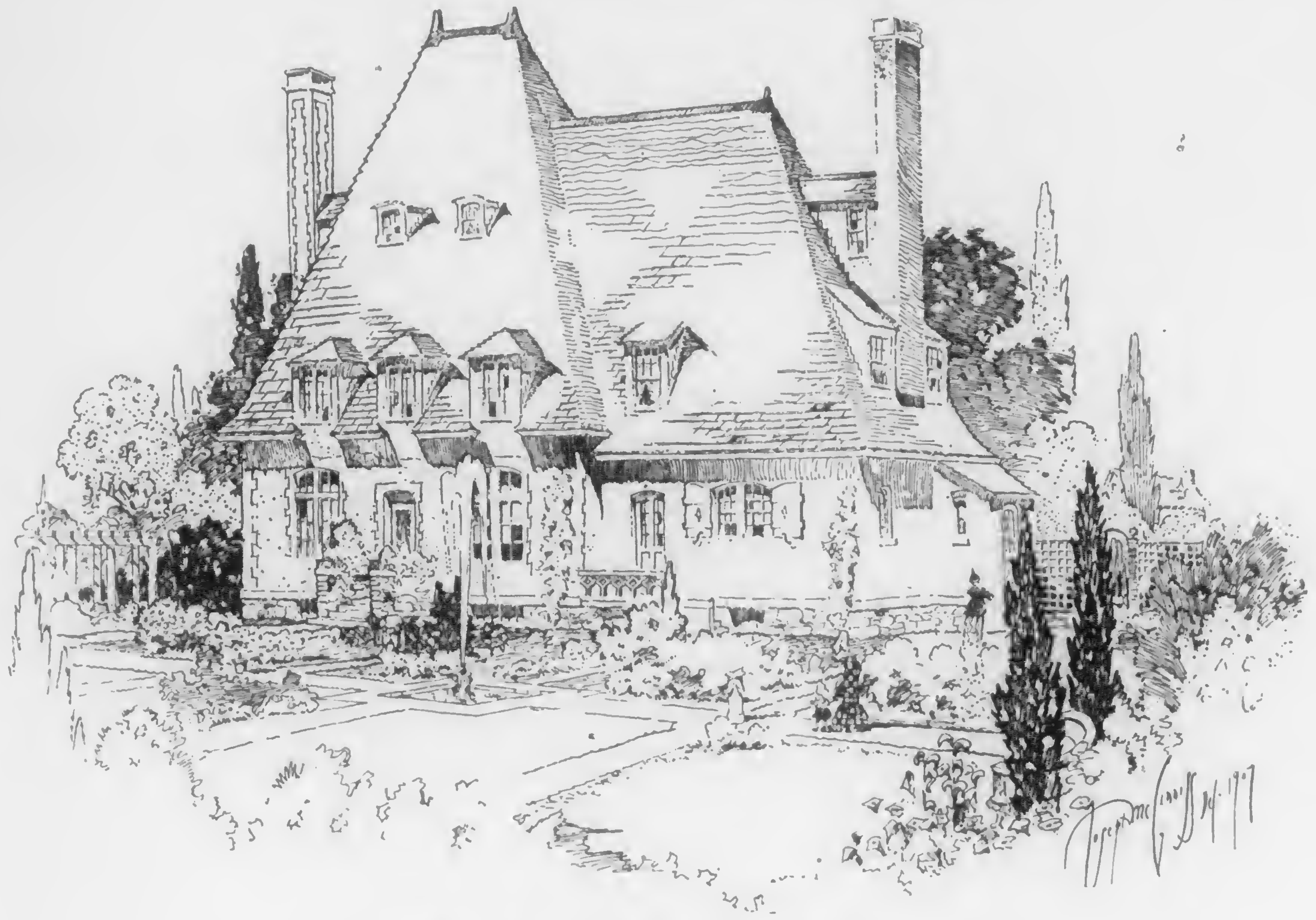
* * *

A "Frog Stool" of Concrete

THE most remarkable piece of concrete in the country, is the big "frog stool" band stand just completed by the ladies of the Wednesday Morning Musicale, in a park at Nashville. The free band concerts given at the park during the summer demonstrated the need of something of this kind which explains the generosity of the musical club in presenting this unique structure to the public.



The band stand, as shown in the illustration, is built entirely of reinforced concrete. The umbrella is thirty-two feet in diameter and the enormous weight rests only on the center pillow, which extends into the ground eight feet. Solid steel bars are fastened in a block of timber at the base of the pillow.



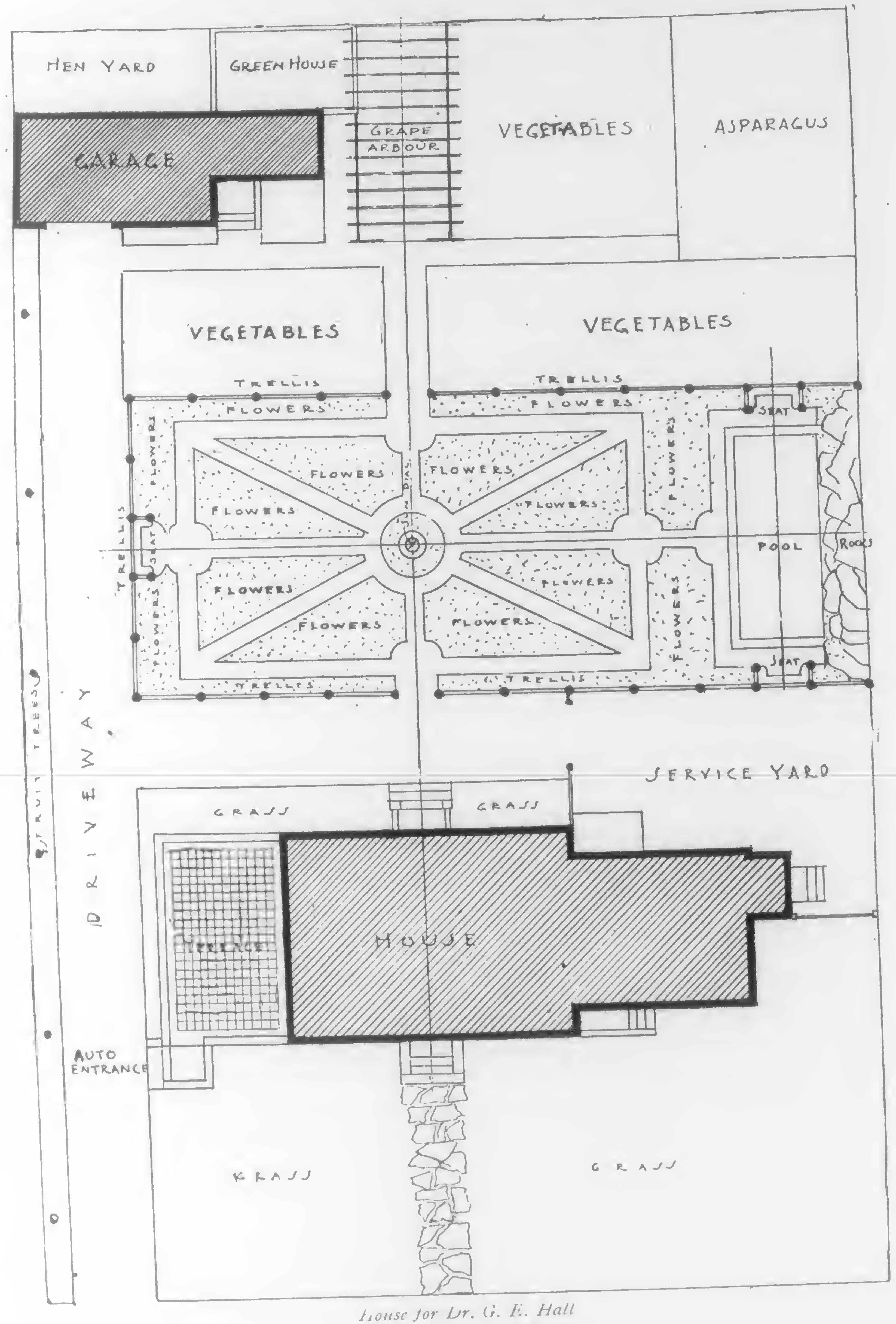
House For Dr. G. E. Hall, Newton, Mass.
H. W. Morton, Architect

What $7,500 will do in Building a Fire-proof House

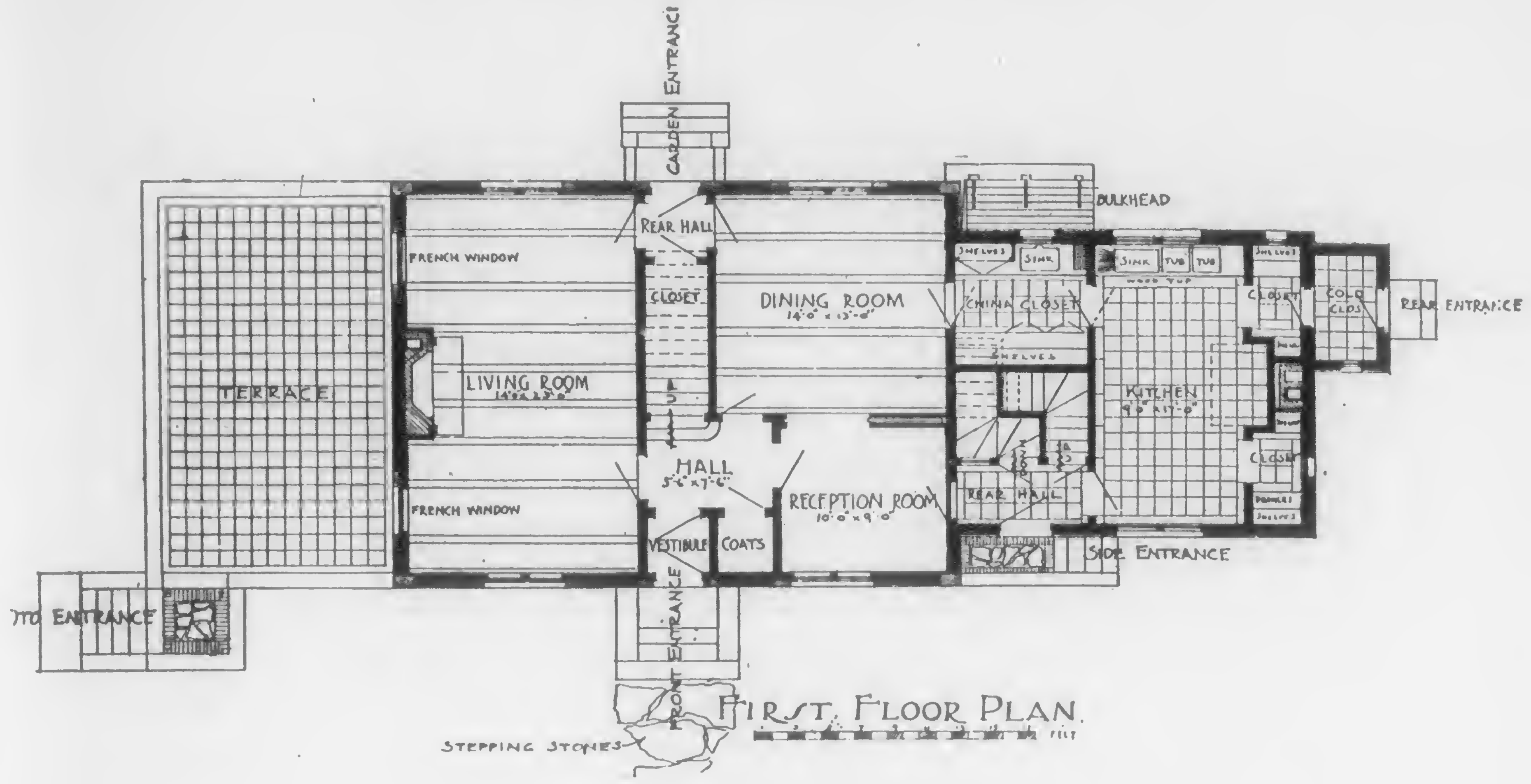
By ALEX. WARREN, in The Brickbuilder

WHILE riding through the country the other day in the auto with some friends, we had occasion to cut through a small side street, and found there a strikingly different house from anything I had seen in many a day. It was of the French chateau type, but of very simple design, as the owner was a man of moderate income and did not wish to incur much expense. It was built so as to require the least possible care and expenditure in repairs in the future, so the architect had chosen the hollow terra cotta block type of construction, which gave a wall about eight inches thick, plastered on the outside with Portland cement mortar, very roughcast, and flush with the trimming stone on the buildings. The inside plaster was put directly on to the blocks, so that there was not the least chance for mice, etc., to communicate to the upper part of the house.

On entering the house—by invitation of the owner, Dr. Hall—from the terrace, we went into the living-room, which was paneled four or five feet high with oak wainscoting and plastered above and papered. The ceiling in this room, in fact in several other rooms in the main part of the house in the first floor, were plastered between rough beams with one coat of rough finish plaster, tinted to the shades as required to match the finish of the room. The red brick mantel, with its wrought iron crane, added to the charm of the room, especially as the brick were selected to imitate the very old bricks, the same as found in some of the oldest houses, with rounded edges and very much discolored. This



House for Dr. G. E. Hall
H. W. Morton, Architect

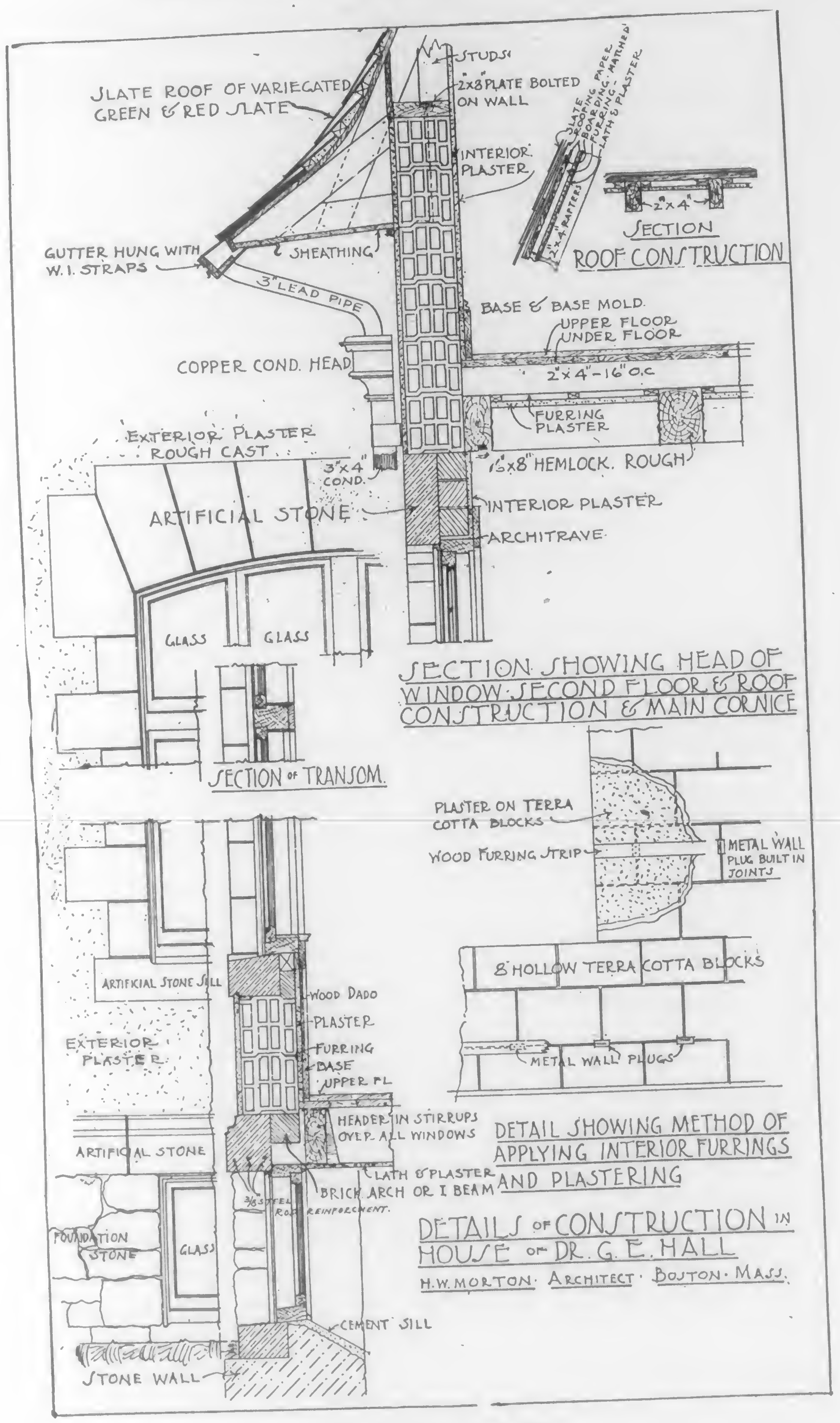


living-room had four very large French windows in it, two of them going out into the terrace at the side of the house, the other two overlooking the front and rear. Between the living-room and the reception room was a small hall finished the same as the living-room, with a coat closet and a door to the vestibule on one side and the stairs to the upper story on the other side. Dr. Hall said that the reason it was so small was that he considered it unnecessary to have a large hall when he had such a reception room and a large living-room. The reception room was finished in wood lattice, stained green, over lilac design wall paper, in panels, with trellis effect, all round the room and on the ceiling.

The dining-room was of natural oak finish, with the same style ceiling as in the living-room, and with a simple board dado about two feet high. The china closet, kitchen, kitchen closets and what was called the cold closet, also the rear hall, had a floor made of square clay tiles, chosen for variegation and color effects and laid with a very small joint. One reason for this was that there was no cellar under this part of the house, and therefore it was laid on a bed of concrete, which made it warm in winter and cool in summer, and at the same time perfectly sanitary, lasting and fireproof.

The recess in which the stove was set was covered over with a galvanized iron hood leading to a vent register in the back to keep the odors from broiling, etc., from getting into the main part of the house. The cold closet back of the kitchen, and separated by a kitchen closet, held the refrigerator on one side and a screen closet on the other side, and so designed that the window in winter could be opened, thus saving the expense of ice. The walls of this cold closet, as well as those of the entire first story of the house, were of the eight-inch terra cotta tile of a special design, and so made as to have no through joints in which water might work, either vertically or horizontally.

One pleasing thing was a blind door between the reception room and the rear hall, so made that when the lattice work in the reception room was put on, the joint was absolutely hidden, and as no hardware of any kind showed in the room the door was perfectly secreted.


SLATE ROOF OF VARIEGATED GREEN & RED SLATE
STUDS
2x8 PLATE BOLTED ON WALL
SLATE, ROOFING PAPER, BOARDING, MATCHED, FURRING, LATH & PLASTER
INTERIOR PLASTER
2x4"
SECTION ROOF CONSTRUCTION
GUTTER HUNG WITH W. I. STRAPS
SHEATHING
3" LEAD PIPE
BASE & BASE MOLD.
UPPER FLOOR
UNDER FLOOR
2x4"-16" O.C.
COPPER COND. HEAD
FURRING
PLASTER
EXTERIOR PLASTER ROUGH CAST
3"x4" COND.
1½x8" HEMLOCK. ROUGH
ARTIFICIAL STONE
INTERIOR PLASTER
ARCHITRAVE
GLASS
GLASS
SECTION SHOWING HEAD OF WINDOW· SECOND FLOOR & ROOF CONSTRUCTION & MAIN CORNICE
SECTION OF TRANSOM.
PLASTER ON TERRA COTTA BLOCKS
WOOD FURRING STRIP
METAL WALL PLUG BUILT IN JOINTS
8" HOLLOW TERRA COTTA BLOCKS
ARTIFICIAL STONE SILL
WOOD DADO
PLASTER
FURRING
BASE
UPPER FL.
EXTERIOR PLASTER
METAL WALL PLUGS
HEADERS IN STIRRUPS OVER ALL WINDOWS
DETAIL SHOWING METHOD OF APPLYING INTERIOR FURRINGS AND PLASTERING
ARTIFICIAL STONE
LATH & PLASTER
BRICK ARCH OR I BEAM
⅜" STEEL ROD REINFORCEMENT.
DETAILS OF CONSTRUCTION IN HOUSE OF DR. G. E. HALL
H. W. MORTON· ARCHITECT· BOSTON· MASS.
FOUNDATION STONE
GLASS
CEMENT SILL
STONE WALL

House For Dr. G. E. Hall
H. W. Morton, Architect

The second story was filled with good sized, cool, well lighted bedrooms with large closets wherever possible. The linen closet was fitted with drop shelves and drawers, and the wood was of red cedar so it could be used for storage of winter goods in the summer time to protect from the moths. The bathroom had the regular fixtures and a large tub fitted with a ring shower, also a wood floor and a tile dado to about five feet in height. On the third story was a most interesting room which was used for a play room at the present time for the children, but so designed as to be easily made into a billiard room or divided into two bedrooms. All the rafters of the roof were shown, and between these a filling of rough plaster had been used. I noticed that the construction was very light, that is, of very small size timbers, and was told that this had been used for two reasons: One to save in expense and the other that it was all that was necessary, as the roof was so steep and high that it was practically a vertical load. Each rafter was trussed at the upper part of the room, and a niche at the opposite end of the room to the stairs had a delightful large fireplace of red brick, which made the room very interesting. All the woodwork had been stained brown and the plastering tinted slightly off of the white so as not to have too sharp a contrast. The roof of the main house and kitchen part was covered with variegated red and green slate laid in wavy lines of different sizes and thicknesses, and was different from anything I had seen in a long time.

On going down to the first floor again we went through the living-room and out of the garden entrance across the service driveway to the flowergarden, which was enclosed in a high trellis in simple design and painted white, and over which were growing crimson ramblers. Inside this trellis was a beautiful Italian garden, with its seats and paths, and in the center a sundial. At one end of the garden was the lily pool of cement, with a large rockery at the back of it in which were hardy ferns and vines. Seats at each end of the pool added to the delightfulness. Beyond the flower garden and at the rear of the place was the vegetable garden.

A small garage of the same type of construction as the house had been built in one corner, with space in the upper part for a man to live in, and back of the garage a large hen yard and a greenhouse. The stable and greenhouse were heated from the same source.

* * *

When to Stop Advertising

An English journal requested a number of its largest advertisers to give their opinions concerning the best time to stop advertising, and the follow-replies were received;

"When you would rather have your own way and fall than to take advice and win."

"When you stop making fortunes right in your sight solely through the direct use of the mighty agent."

"When you forget the words of the shrewdest and most successful men concerning the main cause of their prosperity."

"When the population ceases to multiply and the generations that crowd on after you and never heard of you stop coming on."

"When you have convinced everybody whose life will touch yours that you have better goods and lower prices than they can get anywhere else."

"When younger and fresher houses in your lines quit starting up, and stop using the newspapers in telling the people how much better they can do for them than you can."

The Competition "Ghost" in America

By F. W. FITZPATRICK, Consulting-Architect

THE article in the October Architect and Engineer of California on the "Competition 'Ghost'," quoted from the British Builders' Journal, was very interesting to me, as that same article (or parts thereof) has been fired at me by "kind friends" and critics ever since its first appearance. Indeed, some of our home journals have had things to say, comments to make, in which the British "ghost" has been compared with the American "Consulting-Architect."

I don't know how many consulting-architects there are in the country, but I do know that I was the first one to establish that form of practice, as a legitimate and full-fledged profession, this side of the water, and as dean of that profession, it is probably "up to" me to make some answer, to take some notice of the aforesaid article.

As far as the name goes it matters little to me, and I suppose not much more to my confreres, whether we be called "ghosts" or any other pet name that it may please our ethical critics to devise or borrow. A word, however, as to our practice and the ethics we have established may not be amiss, and I would ask the indulgence of and a little space in the Architect and Engineer while I paint a little pen-picture of the new profession that has stirred the ire and spleen of a considerable number of the "regulars."

Apparently in England the "ghost" is a much despised and mysterious individual who works in secret places and supplies the talentless with the proper ammunition with which to go out and gather glory and shekels. His services are awfully underpaid; he is generally a man who couldn't possibly make a living as a practicing-architect; a draftsman in distress and one who in order to be kept straight has to be locked up while he is doing some particular piece of work! Altogether, he may be sized up as something rather despicable, a cross between a private detective and what is termed here a "fence." So much for the English "ghost." At this distance and from that description, given in the English technical journals, he is not a pleasant personality to contemplate and certainly his position in society not such as to make us green with envy.

There may be "ghosts" in America, but I am hanged if I can see where this description fits a "consulting-architect" or any reason for some of our English cousins and some jocular friends in our own country coupling the two names and chuckling most inordinately at the result of their stupendous wit.

For the benefit of those architects and others interested in building who have not yet had dealings with a consulting-architect, I will briefly describe my own practice that, I am sure, is in no way different from that of my confrères. There is nothing mysterious or hidden or underhand in my connection with practicing-architects. By training, force of circumstances and perhaps exceptional opportunities, I have acquired certain skill and wide experience in particular branches of architectural work; I have associated with me distinguished specialists in other branches, structural-engineering, heating, ventilation and all those other details of building. We are not "draftsman out of a job" or men who cannot practice our several branches or all of architecture in the usual and commonplace way, but we have selected this manner of doing it because it is more pleasing, gives us an indefinitely wider range to operate in and is more remunerative by far. Our services, like those of the "legitimate" practitioner, are at the disposal of anyone who has legitimate business to offer and the wherewithal to pay for the service.

There are mighty few architects in the country who can afford to maintain a full corps of high-class specialists regularly and permanently. This organization gives them that class of assistance and just when they need it and they are paying for that and nothing more. One architect can and does design very cleverly, but feels a bit shaky about construction, or, as I say, cannot afford to keep on his staff a high-priced structural engineer. We take his plans and arrange his structural work for him. For another it is the heating and for another, all the mechanical branches. Still another may be a good and careful superintendent whom people are anxious to have carry on their work, but who realizes himself that he is deficient artistically. For him we will make just as good a design as we know how.

And why not? What is there unethical in him or in me in that transaction? How many architects, big or little, can or do absolutely make the designs for which they receive the credit? Now, gentlemen, don't all sing out at once. The anxiety of the profession to rise as one man, red in the face and loudly proclaiming "I do," makes one think of the nursery when it becomes a question of who stole the jam.

There are some very able men in the ranks of the practicing brethren who can design superbly and whose knowledge of construction is all-comprehending, but who, for the life of them cannot present a design in popular, pictorial and attractive form. Their drawings are all right technically and can be interpreted by the craftsman but are unintelligible to the layman. What is such an architect to do to be thoroughly ethical? Must he abstain from having a consulting-architect or other artist-colorist put his drawings into such language, I might say, as will be understood by people who cannot read a plan, but who can understand a photograph-like representation of the completed structure? This one matter of perspective, pictorial delineation is rather interesting. How little of it is really properly done and how few there are who can do it may be appreciated when I say that it is conceded by experts that in all this vast country of ours there are just seven men who can do it at all well. Bar out the so-called "ghosts" from that number and you have a mighty few left.

In competitions, perhaps there is more ghostliness because, forsooth, like the despised Englishman I do take a lot of that kind of work on a contingent fee. A competition comes up in some town, an important building. A local man is invited to compete. His friends are many, his standing good and he knows that if he can submit a clever design he has excellent chances of winning out. He comes to me with a proposition. We go into the thing on a silent partnership basis. I make him pay so much, just enough to cover my expenses in that work, whether we lose or win—otherwise every blessed architect in the country would be wanting me to go into every competition with him! Then if we win out I have a contingent fee of so much or such a share in all the profits that accrue. Meanwhile he has the advantage of consultation with, and assistance of all my associated specialists and myself all during the continuance of the work. What is there wrong about it? Are such partnerships (silent as to name, granted) barred by business ethics or morals? If architecture were practiced as in olden times and as is done yet in a limited way in England, as an art, something quite personal, where all that was done was the handiwork of the master spirit, it would be another matter. Or if as in the law, the leading talent, the high cockolorum, has to personally present the case, or the physician who is the whole thing and must be seen by each patient, it would be different; but architecture today is a business. People employ an architect solely to obtain results, and it is not a question with them or with him as to how those results be gotten or whether they be personally conducted or otherwise. The architect is expected to produce certain things and if he can do that production better by dealing with me or some other consulting-architect than he can by his own efforts, then is he not only helping himself but very greatly benefiting his clients.

We don't go into any one competition with several competitors. No man can successfully compete with himself or do justice to two or more in any such affair. With the competitors' knowledge and consent, however, I have supplied as many as seven of them with copies of rough studies showing the solution of the problem I would present were I competing. This simply gave each one more information about the nature of the building than he got from the program and a nucleus about which to work up his own ideas. But I have been intensely amused in every case where this has been done to hear the judges express very great surprise at the wonderful similarity there was in so many of the plans submitted!

The writer of the article referred to in the English journal says that: "In spite of all that has been done toward putting down the "ghost" system, the Royal Institute of British Architects would be surprised to know the names of some of the Fellows and Associates who have taken the part of "ghosts" or acted as employers of them, the latter including some of the most respected and best architects of the last quarter of the century." Well, perhaps in that regard there is some similarity, for people certainly would be surprised to see the names on my books, big guns and little guns. Some of the big guns come to me for the rough studies of a problem that they probably take to their own high-class experts the next day to show them how they must design such and such a building, these sketches purporting to have been made by them in the solitude of their study by the light of the midnight lamp! Howbeit, that's none of my business and of course I have to be more or less of a father confessor. Everything that I hear or that is written to me is absolutely privileged and treated as confidential but, nevertheless and notwithstanding, I can't help but be amused at times.

It would also surprise many architects to know how many owners there are who believe in and use a consulting-architect. Plans and specifications are sent to me from all over the country for revision, suggestions and approval before the actual work of construction is begun. And in that connection I would say that it is really surprising to see how little, apparently, the average practicing-architect knows about cost, for in the past six months fully 80 per cent of the plans so submitted to me could not possibly be executed for anywhere near the amount of the estimate. In a recent case of a large courthouse the appropriation made was $450,000. The committee sent me their accepted plans and were astonished when I told them what they might expect, but just as a test they put the work out for bids and the lowest figure that came in was for over $900,000.

The work is fascinating, interesting in the extreme, enough so that it would keep me in this comparatively new profession even if there were not so many other charms about it. Naturally one only gets the very best, the cream of what is going on. Even the smallest practicing-architect can do the cheapest work brought to him in his own office. He cannot afford and there is no incentive for him to take the little house or the cheap factory to a consulting-architect. It is only the unusual problems that he gets to solve, the bigger, more important buildings that he is afraid to handle alone, the troublesome questions, the knotty, involved and complicated phases of building, of design, of construction, that he will carry to a consulting-architect. And so with his more important brother, the bigger gun in the profession. His own staff is probably busy with a lot of already gotten work. But a competition comes up, he would like to go into it, he hates to take his own people off of their tasks, but there is the consulting-architect, thoroughly equipped to carry on that work better and at less cost than he could do it in his own office, and he is not slow to realize it and to profit by it. So that, as I say, we get the best and most fascinating work, and from Canada and from Mexico, and from New York to San Francisco.

Notes on the Forty-First Convention of the A. I. A.

By LIONEL DEANE, A. A. I. A.,

Delegate from San Francisco Chapter, American Institute of Architects

PRELIMINARY to attending the convention, we had, for a much needed rest, taken a rather extended vacation, visiting the principal cities of the United States, from Portland, Oregon to Portland, Maine; also five Universities and Technical schools, examining their work and noting their methods.

We also had the pleasure of examining in detail, much of the earlier work of the older towns of New England; more particularly Portsmouth, New Hampshire; Newburyport and Salem in Massachusetts.

Having viewed freshly the work of many of the Delegates, and weighed its quality ere meeting them, we are more inclined to report personal impressions rather than a detailed description of the proceedings of the convention.

We will endeavor to do in as simple a manner as possible.

The first general impression was one of bigness. Bigness, not in the numerical strength, nor in stature, but the mental quality that can only be defined by that term. A bigness that seemed to pervade everything, and most fittingly finds its best expression in the chair, for certainly Mr. Frank Miles Day is one of the best presiding officers that it has ever been our pleasure to sit under. The tact and skill with which he held every subject under discussion in rein, was a constant source of admiration.

The surroundings too, lent dignity to the proceedings. The Art Institute, while not the last word in Architecture, and lacking the dignity and directness of either Mr. Atwoods' Field Columbian building or Mr. Cass Gilberts' delightful gift to St. Louis, is, as those things go, a reasonably imposing structure.

While Fullerton Memorial Hall was admirably suited for the occasion, and the Architectural background of Blackstone Hall, with its magnificent assemblage of re-productions of Twelfth to Fifteenth Century portals and other related Architectural objects, was a fitting background for the Lucullun feast that terminated the proceedings.

While not being in a position to say from experience, we have been assured by many who attended the convention, that it was the biggest, broadest and most in keeping with its name, that has been held in many years.

Looking over the assemblage, one would be forced to cry with Maude Adams, in "Peter Pan", "I am Youth, Youth, Youth eternal", for while the dials of earth might show that the individuals had length of days, their mentality gave lie to the finger of time.

It may have been said in the past, that there was a feeling that the average Institute member must be kept in swadling clouts, else would he do himself, and possibly others, damage. That he was not to be trusted with self government, and that a few divinely endowed individuals, were especially appointed their brothers' keeper.

During the past year the Board of Directors, taking cognizance of that feeling, had endeavored to correct same in their report, and only spasmodic evidence of that feeling cropped out.

The Committee appointed to examine the report of the Board of Directors, Mr. Wm. S. Eames being Chairman, brought in a most radical series of recommendations, looking to a remedy of that condition, endeavoring to revise the By-Laws to meet modern requirements.

But, as their report was illy digested and cumbersome, it was referred to the new Board of Directors with instructions to take immediate action.

This we hope will quell any feeling of unrest that may exist; as looking over the personel of the men, who have been for years at the helm, we feel that they are admirably fitted to carry on the work entrusted to them, and, except for the manner of their selection, could not be improved upon. We feel that the Institute is, and has been in the right hands, and no permanent good would come from scattering the positions of responsibility merely to suit geographic requirements. For instance, a man on the Board of Directors, residing on the Pacific Coast, would have to lose a a fortnight's valuable time to attend a meeting, or else be derelict in the trust imposed upon him.

The vast territory covered by the Institute creates a situation which calls for the utmost skill in handling, and would have a tendency to break down that insular provincialism, in what Bernard Shaw calls, and with some sense of fitness, "A Nation of Villages".

In reading his article thereon, while on our way home to San Francisco, the disagreeable accuracy of some of his statements came home to us.

While we are loath to admit it, to a person breathing the vast pure air of the Pacific Coast, his heart expanding as he views our magnificent distances, basking in our glorious sunshine, and rubbing up against his fellow man, who is subject to the same environment, the knitting school methods of some of the older communities is oppressive.

We must not imagine, however, that we are different from our fellow man in other places, for when he is given a like opportunity to expand, he frequently shows up as well or better than ourselves.

And now to give a summary of the proceedings.

On Monday evening, November 18th, a reception was held in the rotunda of the Art Institute, which was a fitting introduction to the Convention.

After due time had been allowed for introductions and promenading through the various halls, filled with treasures of the art world, the delegates and their ladies, together with members of the Illinois Chapter, A. I. A., and invited guests, adjourned to Fullerton Hall, to listen to the various addresses and exercises. After which an adjournment was made till ten a. m., Tuesday, when the Institute began its real work. Here the reports of the various officers and committees were presented and referred to special committees for digestion. Many of them being so voluminous as to take up more than the allotted time of the Convention, if read in total, and showed much thought and time expended on their preparation, as well as unselfishness, on the part of busy men, that deserves the highest encomiums. Some of the reports of the more improtant committees were read and evoked discussion.

Of particular merit were the papers of the committees on:

"Education and Publication," Mr. Ralph Adams Cram, Chairman.

"Applied Arts and Sciences," Mr. Irving K. Pond, Chairman.

"Competitions," Mr. R. Clipston Sturges, Chairman.

"Schedule of Charges," Mr. Edgar V. Seeler, Chairman.

"Signing Buildings, and Using Institute Initials," Mr. Frank H. Quimby, Chairman.

And a very exhaustive and interesting paper on the "Metric System," by I. de Coppet Bergh, which we hope will lay at rest for all time, as far as the architectural profession is concerned, that much vexed question, as to whether we shall employ that arbitrary and non-popular measure; which does not accomplish any better results than the one in use for ages, by the major portion of the civilized peoples of the world.

The "Schedule of Charges," was one that evoked considerable discussion.

Many varied interests in various portions of the Union had to be considered.

The difficulty of providing a uniform scale that would suit all conditions confronting the Convention.

Mr. Seeler had worked intelligently and conscientiously to fuse these diverse interests, and is entitled to much praise for his efforts. But he would be indeed a wonderful man, who could accomplish the task undertaken, and today, after a calm review of the work accomplished, we fail to see any material advancement in clarity and simplicity of expression or directness over the old schedule, and it will be the province of the Board of Directors to clear the atmosphere.

The Schedule, as it at present stands, is so vague that, as frequently happens, if it should be used in Court, as a matter of evidence, we fear that it would prove of negative value to the member of the architectural profession presenting it.

The report of the committee on "Education and Publication," read by Mr. Ralph Adams Cram, was a masterly plea for a higher standard of preliminary instruction, preparatory to entering the lists as a practitioner, and is one to be commended. Yet there is always the fear of overtraining in that direction, and that in the mere pursuit of scholarship, the main issue will be clouded. To us a gentleman should not, as a dancer, achieve that degree of perfection, that he is liable to be mistaken for an exponent of that art, nor make such few mistakes in his grammatical construction as to be mistaken for a pedagogue. And, as we are on nodding terms with several tongues, we feel that the dogmatic statement that a knowledge of Latin, together with the several modern modes of speech (while a consummation to be desired), was an absolute pre-requisite for a career. Which to us is the

"Divine insanity of noble minds
Which never falters or abates,
But labors and endures and waits
Till all that it foresees it finds,
And what it cannot find, creates,"

is going a trifle beyond the present scope of the Architectural Profession.

The reason we allude to this is, as we said in the beginning, we have visited several schools, and found in some a tendency to sandpaper the individuality out of the neophyte sitting at the feet of Wisdom. In discussion with members of other professions on that subject, we have found the same condition of affairs in relation to their particular lines of life.

In our position as a member of the California State Board of Architecture, we have had an opportunity to note the results of the various schools, not only of America, but of the whole world on their graduates, and therefore should have a larger horizon than the average practitioner, whose vision naturally turns to his "Alma Mater," and is concentered thereon. The natural tendency to cultivate exotic growths rather than virile herbage has been noted, and we, of this land and age, instead of the simple culture of Greece, seem to be striving for the florescence of Rome.

In the report of the Committee on "Competitions," Mr. R. Clipston Sturges brought in a well thought-out paper, which, with but little amendation was adopted. The gist thereof was to provide a meeting ground for architects and their prospective clients, where all would feel that justice would be meted out.

Mr. Quimby's report on signing buildings and using initials was an eminently proper one and the members of the Institute were urged to do so, when by so doing they would reflect credit both on the Institute and themselves.

There were a number of able reports, but it seems to us that these were the ones that made the most impression on the Convention.

The form of election of officers was gone through with, and the report of the Committee on the election of Fellows, Corresponding and Honorary Members was adopted without comment. Toward the end of the session the Convention, apparently struck by senility, reverted back to its methods of other days, and a motion was made that a new office should be created, to honor three men, one of whom only was mentioned, the other two being anonymous, and strange as it may seem, legislation of that character, in spite of vigorous protest, was swallowed by the Convention, looking at its watches, preparing to dress for dinner, and sluggish from its past efforts. Mr. Cass Gilbert was elected President for the ensuing year.

There were a number of papers read during the intervals of the Convention, some of which were illustrated with lantern slides, while in others there were "demonstrations."

Except for the paper of Dr. Allerton S. Cushman, none seemed to throw new light on the subject discussed. Dr. Cushman's paper on the Corrosion of Steel was a timely subject and one of great interest to the architectural profession, dealing as we are in such an intimate manner with this subject. It was exhaustive and full of meat, and we hope that it will be placed in such form as to be in reach of every member of the Institute.

After listening to Mr. F. W. Baldwins' paper in as far as we could see, the Tetrahedral System of Construction is not of much service to the architectural profession.

The Illinois Chapter was indefatigable in its efforts to entertain the members of the convention and their friends, and too much praise cannot be bestowed on them.

We feel that the delegates returned to their various homes satisfied that they had accomplished considerable that will be of use to the Architectural profession—even if much is yet to be desired.

* * *

Color

By A. W. REIBER

IF WE take up the study of interior decoration, it is necessary also to know something of the origin and nature of color and color harmony and contrast. The use of proper color in furnishing is as necessary as good form and line in design.

If we study historic ornament and design in all its different and varied stages we find also in each case its corresponding scheme of color.

As the Louis XVI style of design is composed of delicate line and dainty coloring, so is the striking design and bright coloring characteristic of the Oriental rug.

We might consider color as a natural sensation much the same as we would consider the sensation of sound. We know that if a note of music is struck, we put into vibration air waves which in turn affect the ear drum, thus producing the sensation of sound.

If a number of notes are struck and they are the right ones, we produce a harmony of sound. If there is no ear present there would be no sound.

Thus in the same way the analyzation of light rays gives us the sensation of color and where there is no light there is no color.

If we analyze a ray of sunshine we find there the colors of the spectrum, in other words, the primary colors.

And it is the knowledge of the handling of these colors in the productions of shades and hues and tones which enables us to make perfect and artistic harmonies and contrasts.

We find in the ancient period of ornament and decoration the extensive use of the primary colors, red, yellow and blue.

The early Egyptians used these colors in addition to green, black and white in lavish quantities.

The interiors of that time presented a dark and gloomy appearance and for this reason it was necessary to use bright and vivid colorings to counteract this gloom, and also that the decoration might stand out in proper proportion and not fade into insignificance.

So we, in this latter day, adapt the use of color in proper proportions to our conditions and surroundings. Color is one of the most important factors in the proper furnishing of the home.

Each room should have its individual color scheme and in order to make an artistic and lasting effect a number of things must be taken into consideration.

The use of each room, the amount of light available in each, and the relation of one room to another are all questions of greatest importance. The rooms of a house vary in position, thus we find some rooms deficient in sunlight while others have an abundance of light.

The wall treatment should supply the deficiency in the dark or colder rooms, and the wall in the light room should neutralize conditions in it.

Take for instance, the rooms in the modern home. In the dining room, living room or library, where heavy woodwork is used, and heavy furniture is necessary, we will find it requires the use of heavier design in coloring, while in the drawing room, or reception room, or parlor, where furniture of lighter and more delicate line is used, the design and coloring should also be more delicate to correspond.

Mention mahogany to some people and they immediately come to the conclusion that green is the proper thing to use for a decorative color scheme because it is a contrasting color.

Or, on the other hand, talk about the darker shades of oak and the conclusion is reached that red is the proper thing.

The decorator who has the ability to assemble the proper articles and has the knowledge of the use and value of color at his command is in a far better position to benefit the public at large than the man who does nothing but copy historic and period styles, for work that is strictly right in period style is not often appreciated. Or, in a great many cases, an interior which has been carried out strictly right as to decoration is spoiled by the introduction of furniture or other articles which are out of place therein.

The color to be selected for a room is not always that which contrasts best with the woodwork, but take into consideration the combination of colors which when properly put together will make the most harmonious and liveable interior, and which will show individuality and style which is not common.

In building, decorating and furnishing, one definite purpose is essential and that purpose always

"One Harmonious Whole."

* * *

A church that will be the largest and most novel in this country is to be built in Cleveland, Ohio, by John D. Rockefeller. The edifice is to stand on the present site of the Euclid Avenue Baptist Church, the Rockefeller place of worship, and will bear the name of the present structure. It will be 16 stories high, and will be institutional in character, having gymnasiums, lecture rooms, rooms for clubs and societies for men and women.

The New Wall Papers

A NEW YORK exchange has the following concerning this year's wall paper show.

All the wall paper manufacturers, who annually come from different parts of the country to show the advance samples of their new season's lines, in August, said that this year's show was the most successful ever held. The jobbers all seem to anticipate a busy season, and the entire force of every manufacturer was kept hustling during the entire two weeks of the show, turning over the sample books and in assisting the customers to make their selections. The season was shorter than usual, many of the manufacturers remaining only a week or ten days, instead of the customary two or three weeks, but in this shorter time they transacted more than the usual volume of business. This fact made it more than usually difficult for the man who was not buying goods to see the lines, because there was very little time when the books were idle.

"As a general thing, the coming season's wall papers are a decided advance artistically over those of past seasons. The coloring is better, the designs are better drawn, and there is an evident appreciation of the great advance that has been made in public taste and an effort to keep up with it. Of course, many of the designs show the influence of the best foreign papers, and many papers are shown which are to a greater or less extent reproductions of imported wall papers or cretonnes that have passed the critical judgment of the exacting decorators. But, while these foreign models have been freely used, both for direct imitation and also to serve as motives for original designs, there are still many very fine designs that are purely American, and which use native plants or other ideas adapted from American suggestions.

"While a number of new things were shown, there were no striking novelties, such as the elastic friezes or the designs extending the entire height of the room that were presented a year or so ago for the first time. The novelties are rather in the nature of new methods of printing or new kinds of stock used as the foundation or new background effects. In one case, there is a line of papers printed with colors produced by a new process, which are claimed to resist the fading action of the sunlight and to retain their original color. But this is rather an improvement in manufacturing processes than a novel decorative treatment.

"The needs of the high class decorator have been catered to very extensively, and practically every manufacturer shows many papers that are capable of being used for cut-out and other original effects. Nor are these confined to the more expensive goods, but excellent decorative papers, including independent sidewalls, fabric effects for paneling and for two-thirds treatments, are shown even in blanks and flats. There are also an abundance of decorations, from simple narrow binders to architectural and other treatments with which the more elaborate decorative effects can be produced.

"Nursery papers seem to be a favorite theme this year, quite a number of really excellent designs being offered. Of course, the popular Teddy Bear has been utilized by many of the designers in producing these papers, which at best can have but a limited use. Nearly all the manufacturers also shown a goodly number of pictorial friezes, some of them being used as regular borders to inexpensive blanks. Hence there will be no lack of opportunity for the decorator of original ideas to produce truly novel and artistic effects, even at low prices."

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

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SECOND VICE-PRESIDENT	R. CLIPSTON STURGIS New York.
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For Two Years—Alfred Stone, Providence, R. I.; Irving K. Pond, Chicago, Ill.; Ralph Adams Cram, Boston, Mass.

For One Year—W. A. Boring, New York; J. M. Donaldson, Detroit; Merritt J. Reid, San Francisco.

*Executive Committee.

Next Convention at Chicago, Illinois

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Open Oakland Office

John Parkinson and Edwin Bergstrom, architects, announce the opening of offices in Oakland. Mr. Joseph Norris has been placed in charge of the office which is at 520 Central Bank building. This same firm also has offices in the Union Trust building, Los Angeles and the Linz building, Dallas, Texas.

Takes Vacation

C. W. Dickey, architect, of Oakland, has been renewing old acquaintances and incidentally taking a well earned rest at his old home in Honolulu. Among the notable buildings which Mr. Dickey designed the past year were the Oakland Bank of Savings and the Claremont Hotel in Berkeley.

Julius Krafft Busy

One of the busiest architects in San Francisco since the fire is Julius Krafft & Sons with offices in the Grant building. Among the buildings either finished or now under way by this firm are the following: Bullock and Jones building, Sutter and Kearny streets; Mercedes building for the William Wilson Company and costing $125,000; the Gashwiler apartment house at Jones and Ellis streets; the Hoeckle apartments at Eddy and Leavenworth streets; six-story building on East street for the William Wilson Company; the Sahlein building at Polk and Bush streets and a handsome $16,000 residence, just started, in San Mateo for L. D. Macdonald of the Macdonald Lumber Company of San Francisco.

San Diego School Plans

In response to the notice sent out by the San Diego board of education, for plans of a school building thirteen firms of architects responded. At a meeting of the board each architect was allowed fifteen minutes in which to explain his drawings. Before examining the plans the board required the architect to state that he would waive any rights to compensation, provided, bids could not be obtained in accordance with his estimate.

The following architects submitted designs, together with estimates of cost:

Harrison Albright, $90,000 for a building 202 by 85 feet, to be built of either concrete or brick at the pleasure of the board.

F. S. Allen, $89,000 for a building 166 by 93 feet, of concrete with hardwood floors; $82,000 with concrete floors; $75,000, pressed brick; $72,000, brick; $63,000, wooden frame.

J. C. Austin, $85,000 to $87,000 for a building 188 by 129, of pressed brick.

C. H. Blackman, $90,000 for a building 256 by 192 feet, of pressed brick; $88,500 for the same construction, but different plan.

Bixby & White Co., $84,000 for a concrete building.

J. M. Bramlett, $88,000 for a building 214 by 73 feet, of brick with stone facings; $77,000 for concrete; $70,000 for pressed brick; $63,000 for common brick.

B. W. S. Clark, $85,000 for a building of brick with stone trimmings.

Henry L. Gay, $90,000 for a building 180 by 70 feet, of selected brick.

H. W. Glidden, $89,850 for a building of brick.

William Hebbard, $83,200 to $89,600, for a building of common selected brick with artifical stone trimmings.

Edward Quayle, $89,000 for building 197 by 90 feet, of common brick with cement blocks to water tables.

San Diego Construction Co., $82,000 for a building 215 by 92 feet, of reinforced concrete; $79,000 for common brick.

L. B. Valk Architectural Co., $84,500 for a building of brick and cement.

Architect Austin's Plans Accepted

The plans submitted by Architect John C. Austin of Los Angeles for the proposed school building to be erected at Twelfth and E streets, San Diego, were adopted by the board of education of that city at their last meeting. Eleven ballots were taken to decide the question, the board being divided on the plans of the successful architect and those of Harrison Albright.

The successful design is classic and Doric in style. The building is U-shaped, two stories and basement and is estimated to cost between $85,000 and $87,000.

On the ground floor there will be ten class rooms and a kindergarten room. On the second floor there will be eight class rooms and an auditorium to seat 510. The basement will be used for the manual training rooms, cooking room, bicycle rooms, lavatories and heating apparatus.

Great Concrete Arches

Spokane, Wash.—If the plans of Mayor C. Herbert Moore, the board of public works and Professor Burr, consulting engineer, are carried out, Spokane will have the longest concrete arch in the world, being 750 feet in length or 517 feet longer than the Walnut Lane bridge, which measures 233 feet. Professor Burr announces plans in preparation for the new bridge crossing the Spokane river, at the foot of the Spokane falls at Monroe street, where is developed 16,000 of the 50,000 horsepower electrical energy available, call for two arches, each 750 feet in length, and it is expected that before the close of 1910 this city will have in the heart of its business district the climax in the construction of the most extended concrete arches in the world.

Outing of Architects and Engineers

The Architects and Engineers Association of Los Angeles held a field day last month. The members were conveyed by electric cars over the Pacific Electric railway to Redondo, where the immense electric power station was inspected, after which dinner was enjoyed at the Hotel Redondo. An attractive after-dinner discussion of various subjects was indulged in by selected speakers. Representatives of the Edison Electric Company, Los Angeles Gas and Electric Company and Pacific Light and Power Company discussed "The Present Installation and Prospective Extensions of Electric Lighting and Power Service," and R. H. Manahan talked on "Municipal Supervision and Inspection."

The program committee was composed of Amos A. Fries, chairman; George P. Robinson and Theodore A. Eisen.

The president of the association, J. B. Lippincott, and Secretary Harry Z. Osborne, Jr., also contributed largely to the welfare of the members and guests.

Hotel Company Exempt

Superior Judge C. D. Wilbur of Los Angeles has rendered a decision in the case of Bovay vs. the Long Beach Hotel company, for damages by reason of personal injuries received in the collapse of a portion of the Bixby hotel in Long Beach last year, while it was in course of construction.

The theory upon which the several suits were brought is that the owner of the building was responsible for certain defects and insufficiencies, which, it is alleged, existed in the architect's plans, and which were the proximate cause of the accident. The defense set

up was that the plans were not defective, that even if they were the collapse was not due to any defect in the plans, and further that an owner is not responsible for defects in plans prepared by his architect, nor for the incompetency or negligence of the architect if he exercises reasonable care in the selection of such architect.

The building was being constructed under plans furnished the owner by Austin & Brown, architects, of Los Angeles. It is claimed by the plaintiff that the collapse was due to a defect in the plans of the architect, namely, that the columns supporting the second and third floors were inadequate to the burden placed upon them. In this connection it should be said that the plan of the building was altered during construction, by the addition of cement roof, adding about 24,396 pounds to the weight supported by each of the various columns of the building.

The defendant claims that the plans were not defective, and that the collapse was due to faulty construction by the contractor, in that the forms and supports used during construction were removed while the cement was too green, and in this connection point out the fact that the weight of the roof panel was supported by means of struts resting upon the cement floor underneath, which was only eighteen days old, and from which all temporary supports had been removed. Defendant's contention is that the collapse was brought about by the temporary supports of the roof punching through the green concrete of the fifth floor. The defendant introduced two lines of evidence in support of this theory; first, the testimony of witnesses who were at work in various portions of the building, some of whom were carried down in the collapse, and second, by eye-witnesses who saw the collapse from the outside of the building. The testimony of these witnesses would indicate that the first evidence of collapse was a sharp crash, followed by a marked sagging of the roof, followed by a pause, sufficiently long to permit some men who were standing upon the sagging portion to walk off, then with a loud crash the recently poured roof gave way and went downward, striking floor after floor, carrying each floor with it in its progress.

The fixing of the responsibility for the disaster is peculiarly difficult, owing to the character of material used, cement, which when first mixed has absolutely no strength at all, and then gradually increases in strength from the time of the initial set until it has attained its maximum strength, which may be some months later. The question of temporary supports in the building, because of this fact, becomes of peculiar importance, and the duty to provide such supports and remove them at the proper time rested upon the contractor.

The columns on the third floor which are made the subject of attack by experts had been poured forty days at the time of the accident, and had gained seventy-five per cent. of their ultimate strength.

With reference to the testimony of the experts, the point on which they most seriously disagree is as to the effect of the reinforcing steel rods. One of the plaintiff's witnesses testified that they were a detriment to the building, and because of their existence he subtracted from the strength of the column not only the steel itself, but all the cement outside of the steel rods, claiming that the strength of a 10-by-10-inch column, reinforced by four steel rods with diagonal wire lacing was equivalent only to a cement column without reinforcement 7 by 7 inches. However, so far as it appears in the evidence, this is the only witness who took so extreme a view, but most of the witnesses for the plaintiff rejected the reinforcement as too light to be considered.

In summing up the judge referred to numerous decisions bearing on the question of liabilities and rendered his decision in accordance. In closing he said that the defendant was not liable unless he knew, or should have known, of the defects in the plans, and there is no evidence to indicate that they had any knowledge or suspicion or any reason to believe that the plans were defective.

The evidence shows that several columns in the building had been repaired by digging out thirty to thirty-six inches of the cement from the floor up, and replacing it with fresh concrete, while at the time of the collapse a column on the fourth floor was being repaired in that manner, and one of the witnesses testified that a few minutes before the collapse he noticed that the steel reinforcing of this column had bowed out, and the evidence shows that the giving of this column, though slight, tended to change the stresses and produce eccentric loading on the other columns and supports.

The evidence in this case has not induced such a conviction in my mind as would justify a judgment based upon the proposition that the collapse was proximately caused by a defect in the plans. Judgment and findings therefore must be for the defendant, inasmuch as the evidence does not preponderate in favor of the plaintiff—1835 Code Civil Procedure.

THE
Architect and Engineer
OF CALIFORNIA

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NO FINANCIAL PANIC

It gives one a shudder to read some of the panic talk which is being indulged in for political and other purposes. But there is going to be no panic, and it is safe to say the worst has passed.

While the financial conditions have been exaggerated for manipulative and political purposes, there is no question that we are passing through a transitory period, under which there will be an adjustment of industrial conditions. The effect has been world wide and is by no means confined to America, much as the enemies of President Roosevelt may strive to make it appear.

There has been an unprecedented prosperity; an industrial prosperity which has never before been recorded in the history of the world. More money has been required to finance new industries, and there has been such a heavy investment of capital that it is now required that there be an adjustment to the new conditions.

One result of the money flurry will be a general readjustment of wages and simultaneously we may look for a perceptible reduction in the cost of living.

ARCHITECTS' NAMES

Much has been written about the apparent neglect of the daily newspapers to give architects credit for their work. The professional publications blame the daily press and attribute their seeming indifference to a disinclination to advertise the architect, unless he pays for the same. The explanation may fit some cases—certain publications that cater more to the owner's pocket-book than the paper's readers—but generally speaking, it is the fault of the architect himself if he fails to receive the prominence he deserves.

The writer personally knows of several instances where newspapers have sent a reporter to an architect for information about buildings which he had designed. The scribe found the architect unwilling to supply the desired information, and consequently he had to seek other channels for facts. When the article appeared, the architect's name was conspicuous by its absence. Had the architect been a little more accommodating the reporter would have gone out of his way to make him prominent in the story. True, architects must protect themselves as well as their clients, who oftentimes are averse to any publicity being given their plans, but it is useless to try and keep such news from the press, once a reporter has been given a "tip", and the best thing the architect can do is to communicate with his client and with his knowledge let the papers have the facts.

A daily paper classes the architect with other professional men and would as willingly mention his name and title as the physician or clergyman. We reiterate: no one is more to blame than the architect himself for the tendency to keep the latter's name out of the newspapers. The time is coming when the appearance of the architect's name in connection with any mention of the building he has designed will be as natural and common as the use of an author's name above or beneath the story or book he has written. But the architect must "come off his high perch," to use a homely but forceful expression, before this can be brought about. And he will, too.

OUR NATIONAL WASTEFULNESS

The Geological Survey is sending out some most timely and important bulletins. It recently issued a warning to the people in regard to the indiscriminate and unscientific use of reinforced concrete in building; one of its latest bulletins calls attention to our wastefulness in deforestration, it shows that we allow more timber to be destroyed every year by preventable forest fires than is used in all the lumber industries; it reiterates the fact that there is more coal left and lost in the ground, by reckless processes of mining, than is taken out, and that at the very most we and our descendants have only coal enough left for less than 100 years.

The size of our country and its enormous natural resources have led us to believe that many things were inexhaustible that on the contrary are being utterly and ruthlessly wasted at a most extravagant and foolish rate, and our people have developed habits of prodigality that spell ultimate national bankruptcy. In fires, for instance, we have gotten so that we really expect and plan for terrific losses. As an example, Washington's record has just been completed and there were 470 alarms of fire in the year resulting in damage of only $250,000. It is one of the lowest and most satisfactory records attained by any city in the land, yet our fires have inflicted a damage, small as we believe it to be, just 350 per cent greater than that suffered by the average of sixteen European cities of equal size.

Incidentally, all the fire adjustment and the other accompaniments of the San Francisco disaster have been tabulated and arranged and it now transpires that what was supposed to be a total damage of about $350,000,000 amounts to much nearer $600,000,000. Only $200,000,000 can be properly charged up to insurance and, therefore, the country has suffered a total wiping out of existence, an obliteration of property, to the amount of $400,000,000 by that one fire. A matter worthy of our most serious consideration and firm resolve to build so as to make impossible the recurrence of such an awful conflagration, a recurrence that is imminently possible now in several cities, notably New Orleans, Boston and Philadelphia.

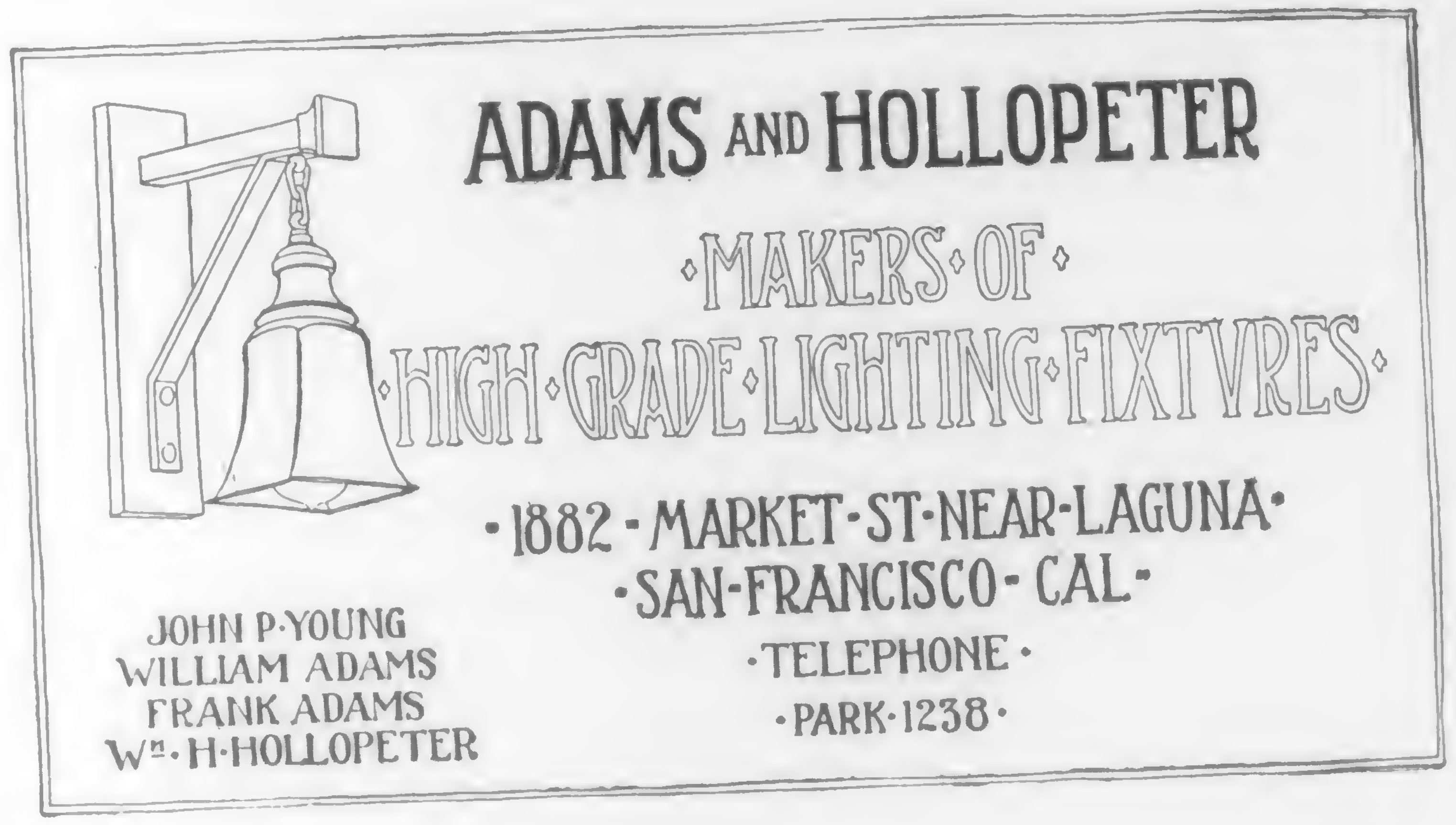
The Publisher's Corner

Waterproofing for Concrete and Brick Buildings

The C. I. Waterproofing Company, with an office at 1397 Broadway, Oakland, was given the contract for waterproofing the fine six-story bank and office building of the Oakland Bank of Savings, C. W. Dickey, architect. The compound can be mixed with the cement for waterproofing concrete buildings or can be applied to the outside as in the case of brick and stone buildings. C. I. Waterproofing is guaranteed to keep out the wet and dampness. As this is strictly a local industry there is an inclination on the part of architects and contractors to use its product and those who have done so say they are entirely satisfied with the results. The company is planning to open a San Francisco office.

Mangrum & Otter

Mangrum & Otter of San Francisco have built a large warehouse which has relieved the congestion of their Mission street quarters quite materially. The company has enjoyed phenomenal success since the fire, due in a measure to its early appearance in business immediately following the conflagration and to the hustling qualities of its president, Mr. Mangrum, and Secretary Charles C. Hanley. Heating systems have been installed by the concern in many of the new buildings erected in San Francisco the past year and contracts have been taken to equip other buildings sufficient in number to keep the company busy all next year. The concern reports a good demand for its mantles and tile supplies.



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·TELEPHONE·
·PARK·1238·
JOHN P·YOUNG
WILLIAM ADAMS
FRANK ADAMS
Wm. H·HOLLOPETER

Mason's Safety Tread

The Mason Safety Tread is much in demand by architects and owners of new buildings in San Francisco. The tread is specified by architects for business buildings, school houses, department and other stores, churches, railroad and street cars, hotels and factories. The San Francisco school department has voted to use the tread in all its new school houses. The tread is adapted for use upon outer or inner stairs of granite, marble, cement, slate, iron and wood; upon thresholds of doors and elevators, inclined passages, car and wagon steps, etc. It is fireproof, cleanly, neat in appearance, noiseless and protects a step to the extreme front edge. The San Francisco representative of the Mason Safety Tread is Oren A. Giles, of 131 Buchanan street, and a postal card addressed to him will result in a prompt call.

Advertising Agency Enlarges Scope

M. L. Hadley, who for eighteen years has successfully conducted the largest advertising agency on the Pacific Coast, has leased offices in the Merchants' Exchange building, and re-opened his San Francisco offices.

Speaking of the progress of the advertising agencies, Mr. Hadley said: "It was in 1890 that I started my agency. I was at that time, advertising manager for a prominent Oakland newspaper, and in making my rounds among advertisers I realized that the average advertiser had too little time to devote to his advertising, in order to secure the best results from the money expended, so I started an agency which has continuously grown, until today, I think I have more good accounts than any other concern in my line on the Coast.

"An advertising agency, to be successful, must make a continued success of its clients' advertising. This can be done only by buying space at its proper cost, using only the best mediums, and giving the advertiser a service in the preparation of the copy that truly represents the business advertised.

"My splendid business is, I believe, largely due to the economy which I invariably practice in purchasing mediums for my clients, and the close personal attention given to detail, and especially the standing of the various newspapers.

"In order that my clients may have the verv best class of service in the preparation of their copy and follow-up methods, without which no advertising campaign is complete, I secured the association of Mr. Edgar M. Swasey, the best all-around ad-writer in the West, as manager of my service or copy department. Mr. Swasey has managed the advertising of many of the successful business houses in San Francisco, and is thoroughly familiar with advertising methods which have proven to be very profitable, consequently, he brings to my agency, added strength.

"For a great many years all of the principal accounts on this Coast have been placed through my agency and with present facilities for the production of effective copy, follow-up methods, and advertising literature, I expect my business will keep right on growing.

"The Architect and Engineer of California is one of the mediums I select for the use of my clients."

Figure and Memorial Windows A Specialty

San Francisco Art Glass Works

ART GLASS
EMBOSSED GLASS
GLASS SIGNS

PRISM GLASS IN
SHEETS AND
METAL SET

Telephone Temporary 3318

944-946 MISSION ST., San Francisco, Cal.

In Business for Himself

J. R. D. Mackenzie, who was with the Watson Roof Company, in charge of its Oakland office for some time, has gone into the roofing business for himself and has already taken a number of good contracts. Mr. Mackenzie is a roofer of long experience and he has the confidence of leading architects and contractors in northern California.

Central Electrical Company Busy

Manager L. R. Boynton of the Central Electrical Company, 185 Stevenson street, San Francisco, reports that his company has no cause to complain on account of the financial flurry. Several large buildings have been wired and others are now being equipped. The Fairmont hotel was wired by the Central Company and other contracts taken by Mr. Boynton are the wiring of the Head building, the Insurance building and the Crellin building.

Woods & Huddart

Woods & Huddart recently mailed to their clients an attractive announcement of their removal from Front street to the second floor in the new building at 356 Market street, the same location occupied by the firm before the fire. In the circular, announcement is made that plain and twisted bars for concrete reinforcement are carried in stock and can be delivered promptly to any section of the State. The company also handles structural steel fabricated ready for erection. The firm represents the American Bureau of Inspection and Tests and is prepared to pass on any kind of structural steel work.

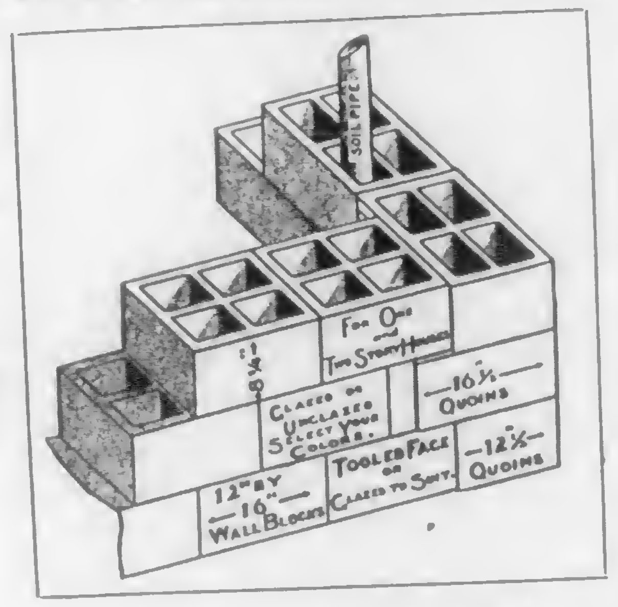
Power and Heating Plant Installed

The Machinery and Electrical Company of Los Angeles has recently installed in the Los Angeles High School science building, a very complete power plant as well as a heating and ventilating plant. The power plant consists of two units Oil City Boiler Works high pressure boilers, 85 horse-power each, a Watertown 12x12 direct connected automatic engine direct driving, a 50 K. W. Western Electric Company's direct current generator; also a 6x6x6 steam driven Franklin air compressor and a full boiler room equipment of feed pumps, oil pumps, tanks, etc.

The heating and ventilating plant consists of one 9-foot Sturtevant cone wheel with full equipment of Sturtevant coils; one Sturtevant 120-inch steel plate blower, full-housed with full equipment of Sturtevant coils and a 120-inch Sturtevant exhauster. The system is regulated by the National Regulator Company's thermostatic system throughout.

A PORCELAIN HOUSE

Our Hollow
TERRA COTTA
Building Blocks
Glazed and Unglazed, will carry 100,000 lbs. per foot. Glazed Facing Blocks for Concrete Buildings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For One or Two Story Houses
8"
Glazed or Unglazed Select Your Colors
16½" Quoins
Tooled Face or Glazed to Suit
12½" Quoins
12" by 16" Wall Blocks

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Special Designs for Kitchen and Bathrooms, Porches and Mantels. Wall, Floor, Enamels, Dull Finish, Water-Lined, Quarries and Terra Vitrea.

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TROPICO LOS ANGELES CALIFORNIA

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THOS. FELLOWS,
Sales Agent.
PHONES, MAIN 1296, A 4953

San Francisco Sales Agent
E. W. HURSSELL
138 26th Ave.

The coils are drained by the Morehead return traps. All of the material named as being installed in this plant is handled by the Machinery & Electrical Company, who are exclusive agents for Southern California. The company is also entire Pacific Coast agents for the National Regulator Company's equipment.

The Pitcher Sliding Door

Architects and builders are taking very kindly to the new Pitcher Sliding Door hangers and sliding door frames and the Pacific Tank Company, the manufacturers, report an increasing demand for the goods. In every case where the hangers have been used, both architect and owner have expressed entire satisfaction with their operation and unhesitatingly have recommended their use. The Pitcher doors can be placed in the ordinary five and one-half inch wall with four-inch stud. The new system of sliding door is a vast improvement over the old swinging door, and it has been actually demonstrated that by discarding all of the swinging doors in the ordinary house more than twenty-five per cent can be saved in ground space. It is the only removable sliding door on the market. The pockets in the frame are air tight, which prevents all possibility of draught. The hangers are especially intended for hotels, apartment houses, flats and residences and are in use in many of the best buildings erected in San Francisco since the fire. Full size doors and frames in operation may be seen at 231 Berry street or 268 Market street, San Francisco. Orders from out of town are given prompt attention.

Among the buildings recently equipped with the Pitcher sliding door hanger are the following: Clark residence, Frank Van Trees, architect; the Clinton apartment house, Jones and Washington streets, Armitage & Rowell, architects; Stewart Hotel, Geary, near Powell, Cunningham & Politeo, architects; hotel Eddy near Leavenworth; Lundy apartments, Stanyan street, C. J. Devlin, architect; The Alameda Building and Loan Building, Oakland, and a handsome residence now under construction at the corner of Broadway and Baker street, San Francisco.

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Theater for Bakersfield

On a diminutive scale the city of Bakersfield is to have an open air theater which, though without comparison with the one at the University of California, nevertheless stands for the same purpose, namely, as a representation of ancient art as applied to modern conceptions of beauty as well as utility. The open-air theater at Bakersfield is to serve as an additional adornment to the park, which has been presented to that city by Truxton Beale.

It will be built in the form of an amphitheater, with a seating capacity of not over 250 people. The stage and wings are Pompeiian and very simple. The side walls and the floor will be of reinforced concrete throughout. The pit has been made quite ample for a large addition to the seating capacity and is enlivened by a central fountain. The design is by Architect Lewis P. Hobart, Crocker building, San Francisco.

Hunt, Eager & Burns

The Los Angeles firm of Hunt & Eager, architects, some of whose work shown in the in the November Architect and Engineer, caused much favorable comment from the profession, has been materially strengthened by the addition of a new member in the person of Mr. S. R. Burns, a former resident of Dayton, Ohio.

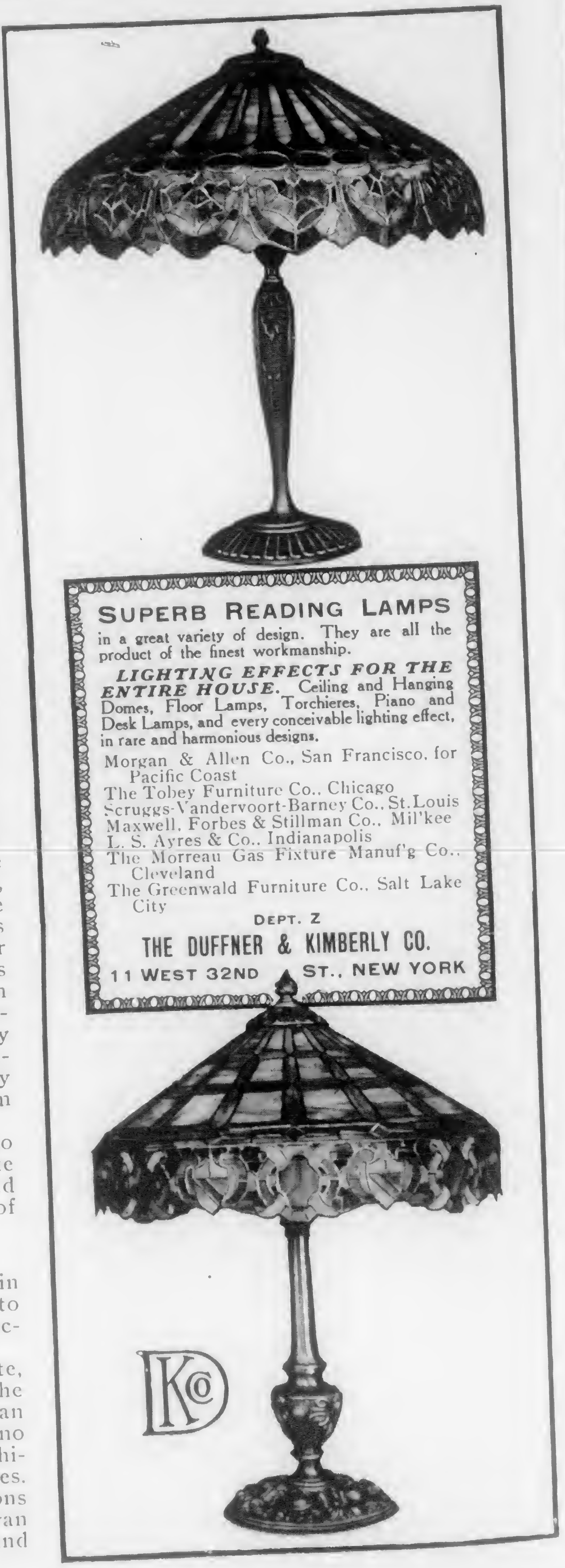
Mr. Burns has visited California periodically during the past twenty years, in fact, at the time the first buildings were being constructed at the Soldiers' Home, in Los Angeles county, he was the supervising architect of the work; as also of several other branches of the National Soldiers' Home. For twenty-five years he has practiced his profession in the East, where his firm gained a reputation for heavy construction work. For a number of years they were architects of various State institutions, schools and colleges, and many of these buildings were erected from their plans.

Mr. Burns goes to Los Angeles to stay. He has been granted a certificate by the State Board of Architecture, and will hereafter be one of the firm of Hunt, Eager & Burns.

Certificated Architects

California is one of the few States in the Union that requires an architect to pass an examination in order to practice his profession in this State.

In the southern district of the State, which comprises all that part of the State south of the northerly line of San Luis Obispo, Kern and San Bernardino counties, there are seventy-two architects who have been granted certificates. The following are the latest additions to the list: B. M. Morris, Albert Bryan and Silas R. Burns, Los Angeles, and L. T. Bushop, Pomona.



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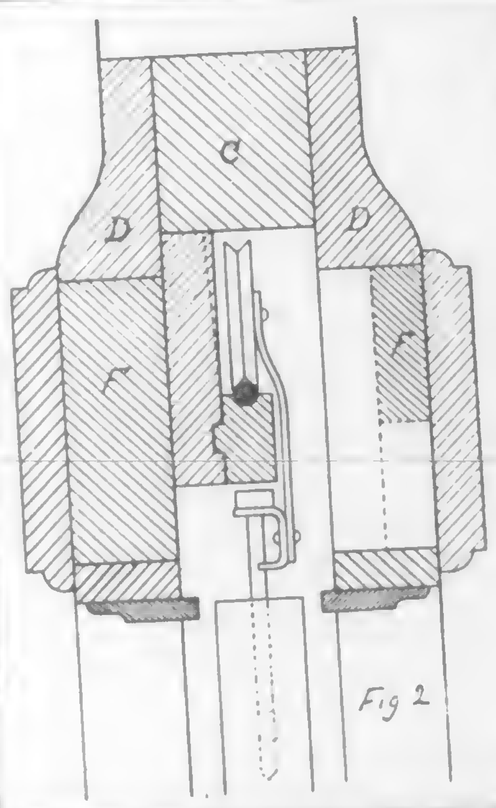
Charges Against Oakland Contractor

Stuffing of pay-rolls on the part of a contractor whereby a large amount of money was secured in addition to a heavy increase in commissions paid, is alleged by the Abbott Kinney company of the Venice of America, near Los Angeles, in a suit recently begun in the Superior Court against John Roberts. The charge is made that Roberts, while contracting to erect buildings for the plaintiffs in the Venice of America, forged the names of workmen until the difference amounted to $3,041.86 and an additional 10 per cent of this for commission. The suit was begun to recover these amounts from Roberts as a resident of Alameda county.

Roberts is a member of the firm of Roberts Bros., contractors, with offices in the Central Bank building, Oakland. Among the contracts taken by this firm since it hung out its shingle in Oakland are the Taft and Pennoyer building and the branch telephone exchange, both of which are under construction.

Recent Orders for Medusa Compound

The Building Material Co., Inc., Monadnock building, San Francisco, reports recent orders for Medusa for the following constructions: Jerome Garage, Polk and Jackson streets; Butler building, Geary and Stockton streets; Woodward Investment Co. building, Turk and Taylor streets; M. J. Brandenstein building, Spear and Mission streets; Corville Estate Company's building, Clay and Drumm streets; Joseph Baer building, Folsom and Fifth streets; Santa Marina Company building, California and Drumm streets; Drexler building, New Montgomery and Minna streets; Oroville Light & Power Co. powerhouse, Oroville, California; Government construction at Point Bonito.



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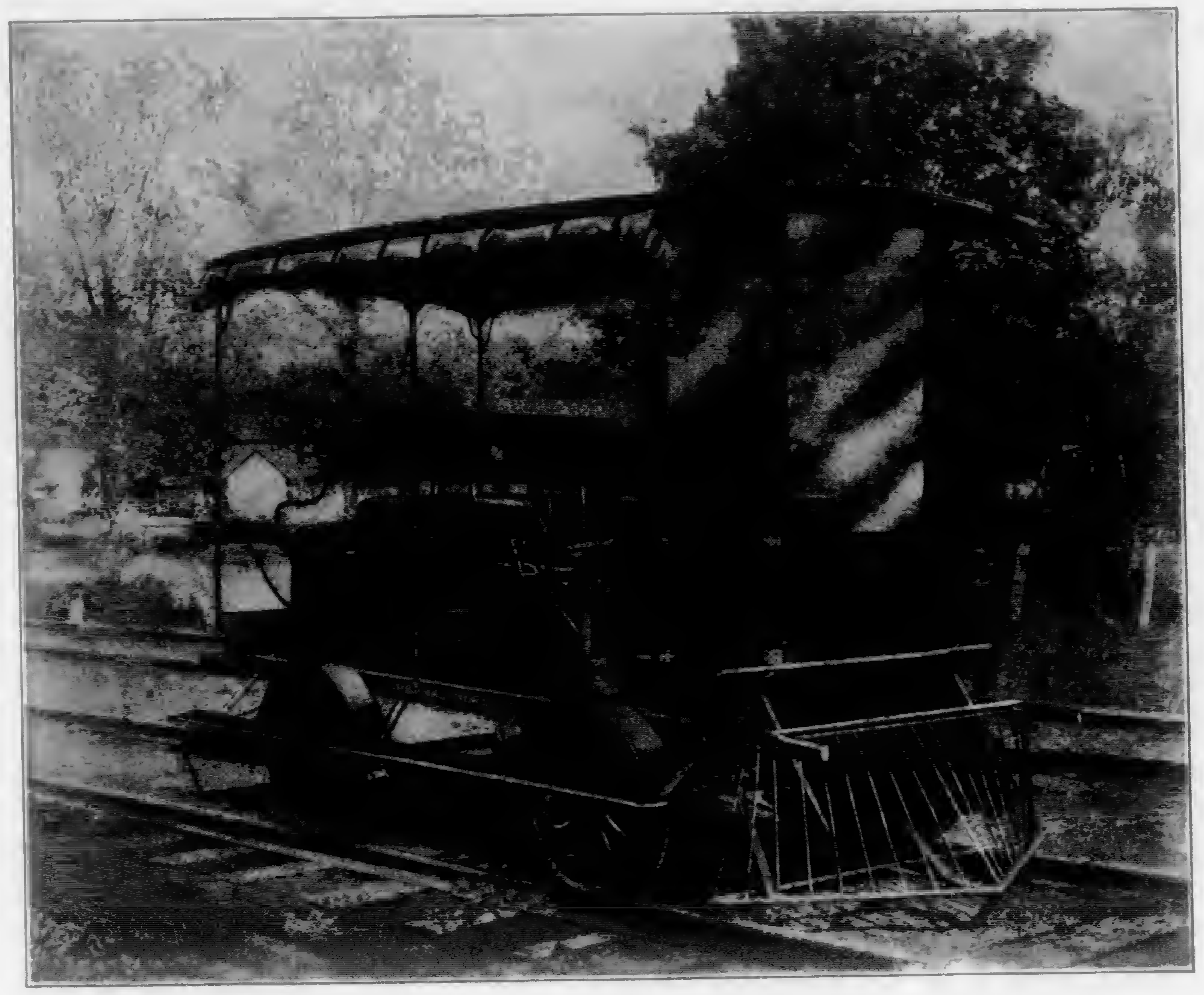

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THE gasoline motor car question, as applied to railroad inspection work, has been receiving considerable attention of late. It is being conceded, by leading railroad officials, as being the most satisfactory method, not only for the inspection work itself, but because of the saving effected, which runs from $45.00 to $60.00 a day.

When Fairbanks, Morse & Co. first brought out the automobile type inspection car, feeling ran high against the machine on account of its weight, the officials claiming that it was not practicable to run a heavy car, except on train orders, which they did not want to do, never taking into consideration that a special car and engine always had to have orders. After persistent effort on the part of the motor car people, a large inspection car was sold to the Michigan Central, and the figures shown on one trip were astonishing.

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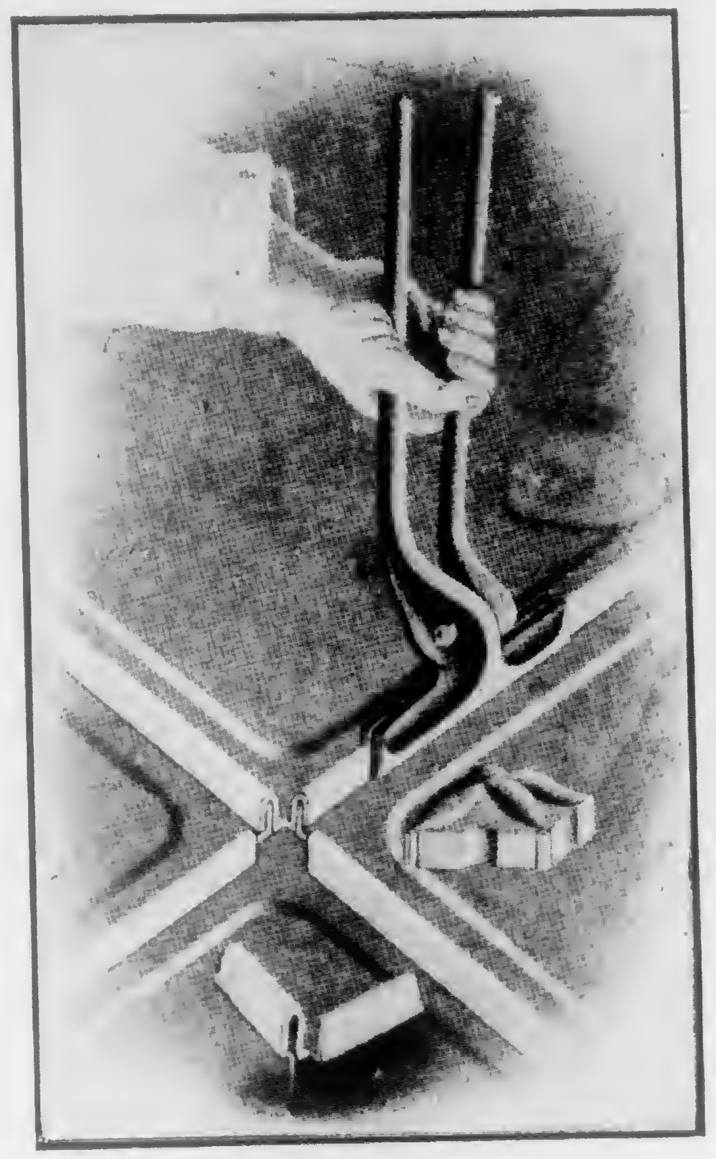
One small freight wreck would nearly equip a large line with enough motor cars for every Superintendent and Roadmaster. Owing to the large number of wrecks in the West, some of the large roads have furnished motor cars for every Roadmaster and have issued a bulletin that the division must be carefully covered once a week. The motor car has come to stay and is daily becoming a greater factor in the up-to-date and economic handling of large railroad systems.

Bennett-Voorhees

Announcement is made of the marriage on December 4th of Miss Ethel Robinson Bennett and Willard Raymond Voorhees, manager on the Pacific Coast of the Russell and Irwin Manufacturing Company of New Britain, Conn. The marriage took place at the bride's home in Ross, where the couple will reside upon their return from the East. Mr. Voorhees has a host of friends on the Coast who wish him happiness in his career as a benedict.

Handsome Electroliers

Thirty very handsome electroliers have just been turned out for San Jose by the Joshua Hendy Company. The casting is of handsome design and the merchants of the Garden City who subscribed for the lights are well pleased with them. They have been placed at intervals along First and Santa Clara streets and add materially to the attractiveness of these thoroughfares in daylight as well as at night. The Hendy Company intends to make a specialty of electrolier castings, as its big factory in Sunnyvale is splendidly equipped for turning out this line of goods.



See that Lock Joint

Metal Ceilings

SAN FRANCISCO architects are specifying metal ceilings more than ever before, a condition which is attributed to several reasons. One is that buildings thus equipped are less likely to be injured in case of a slight earthquake. The plaster ceilings crumbled badly from the shock. Then, again, the metal ceiling is fireproof, clean and as turned out today, quite artistic.

The best metal ceilings in San Francisco are handled by C. A. Chaffey of Van Ness avenue, who has been in the business for a number of years and understands it thoroughly. One of the handsomest metal ceilings in the Bay City was installed by Mr. Chaffey recently in the Van Ness Theatre. The Chaffey goods have a lap and also a lock joint construction. The former ceilings are as good as any on the market, the beads true and the seams as tight as a lap joint seam can be. The lock joint ceilings cost a little more, but those who have used both say they can save the difference in the economy of erection.

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Uncertificated Architects in Los Angeles

Members of Los Angeles Chapter, A. I. A., have started a movement looking to enforcement of the State law regarding the practice of architecture.

It is desired that action be taken to prevent uncertificated architects from engaging in construction work in Los Angeles. At a recent meeting of the Chapter, Sumner P. Hunt and John P. Krempel, members of the State Board of Architecture, explained that the present law is operating as successfully as conditions permit, and advised that no radical measures be adopted at this time. Both admitted that there are trespassers on the domain of the architects who possess certificates and are complying with the Institute regulations in force throughout the country, but they foresaw innumerable legal complications if the matter should be forced to an issue.

It was pointed out that there are firms which evade the Institute rules by having in them an architect with a certificate, and another without one.

Architect R. B. Young presented a communication in which he criticised the opposition of Building Inspector Backus to the use of hollow tile blocks for outer walls in certain classes of buildings. The Council recently acted in favor of the Inspector's contention that this material is not a sufficient safeguard against fire. Architect Frank Hudson suggested that a practical demonstration be made in the presence of the Council and underwriters.

Hoyt Bros. in New Offices

Hoyt Bros., the well-known Santa Rosa contractors, are now in their new offices in Santa Rosa and have as complete an equipment for contractors' purposes as any concern north of the Bay. Hoyt Bros. are prepared to take contracts anywhere in the State. Several good size buildings were erected by this firm in San Francisco the past year.

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